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Sony's a7R II Full-Frame Mirrorless Breakthrough! Pg. 56

Shoot Video, Deliver Stills!

4K Frame Capture

Are DSLRs Still King?

Corey Rich
How To Make A Living By Hanging On A Thread

Doug Menuez
At The Birth Of Silicon Valley

Mark Galer
A Master Becomes The Student

Mark Edward Harris
On Rocking Still + Motion

OCTOBER 2015

MARK SELIGER
PHOTOGRAPHED BY TIM MANTOANI

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SEPTEMBER/OCTOBER 2015 Vol. 13 No. 5 digitalphotopro.com

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Editor's Note

Hi. I'm David, it's nice to meet you.

This issue marks the start of my role as Editor at *Digital Photo Pro*, and it marks the start of what I hope will be a much more personal, engaged and interactive relationship between *Digital Photo Pro* and our readers. It's my goal to connect with you to find out what information you're looking for, what you think works at *Digital Photo Pro* and what you'd like to see us do differently.

If you'd like to reach out, I'm @davidjschloss on Twitter and Instagram, and you can reach me via email at editors@digitalphotopro.com.

I think that it's a really fascinating and exciting time to be a photographer—a time of bounty for some and a time of scarcity for others. New technologies have disrupted the old model of being a professional photographer in a way that even the transition from analog to digital didn't quite accomplish. Photographers who have embraced new opportunities have seen their business change and grow, even as the definition of what they do changes.

This issue's theme is Still + Motion, although that doesn't mean that the coverage in this issue is focused on tools for capturing video. Instead, the theme embraces photographers and the technologies that let shooters think outside the still frame and to reach markets and customers they previously might not have.

Take, for example, Doug Menuez, a multiple-award-winning photographer (and someone I consider a friend) who cut his teeth decades ago as a photojournalist for magazines like *TIME* and *LIFE*, and crossed the world several times in search of moving and powerful stories.

Menuez was as analog as a photographer could get, but today has embraced digital technology, documentary work and social media. In this issue, we're happy to bring you some of the work from "Fearless Genius," the book/workshop/traveling show/foundation that Menuez developed around his documentation

work in the early days of Silicon Valley during the 1980s.

Looking backward into archives only takes you so far, and not every photographer has an archive full of pictures of Steve Jobs and Bill Gates, so in this issue we look more closely at the "disruptive" technologies pushing the boundaries of digital photography. We have an in-depth look at Sony's mirrorless a7R II and the new Zeiss Batis lenses, and give you step-by-step instructions on shooting 4K video and pulling still frames from it.

Photographer Mark Galer, also profiled in this issue, is an Ambassador for both Sony and Adobe, and has been adopting new technologies his whole career. His work today combines stills, time-lapse and high-speed photography, allowing him to keep abreast of new trends in design and imaging, and provide new work for clients.

You don't have to use mirrorless cameras to be on the cutting edge though, which is why we look both at the role of the DSLR in today's professional arena and look at photographer Corey Rich, who has mastered the DSLR in his extreme sports and travel photography, and has also become an accomplished videographer.

Photography is all about change. In the most literal sense, it's about documenting and preserving the change that happens from second to second. It's that role as a proxy for our memory that I think has driven the technological advances in technology—since photographers are trying to capture the world with accuracy and fidelity, we're always looking for tools that better perform the capturing. New films and new developing tools have given way to new processors, sensors and optics.

As photography continues to change, we're going to change right along with it. I'm looking forward to covering the photographers, technology and business practices that define today's (and tomorrow's) photographic world and sharing these exciting things with you.

—David Schloss, Editor

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ON THE COVER: Isabel, San José del Refugio, Amatitán, Mexico, 2001
From the book "Heaven, Earth, Tequila: Un Viaje al Corazón de México"
by Doug Menuez. ©Doug Menuez/Stockland Martel

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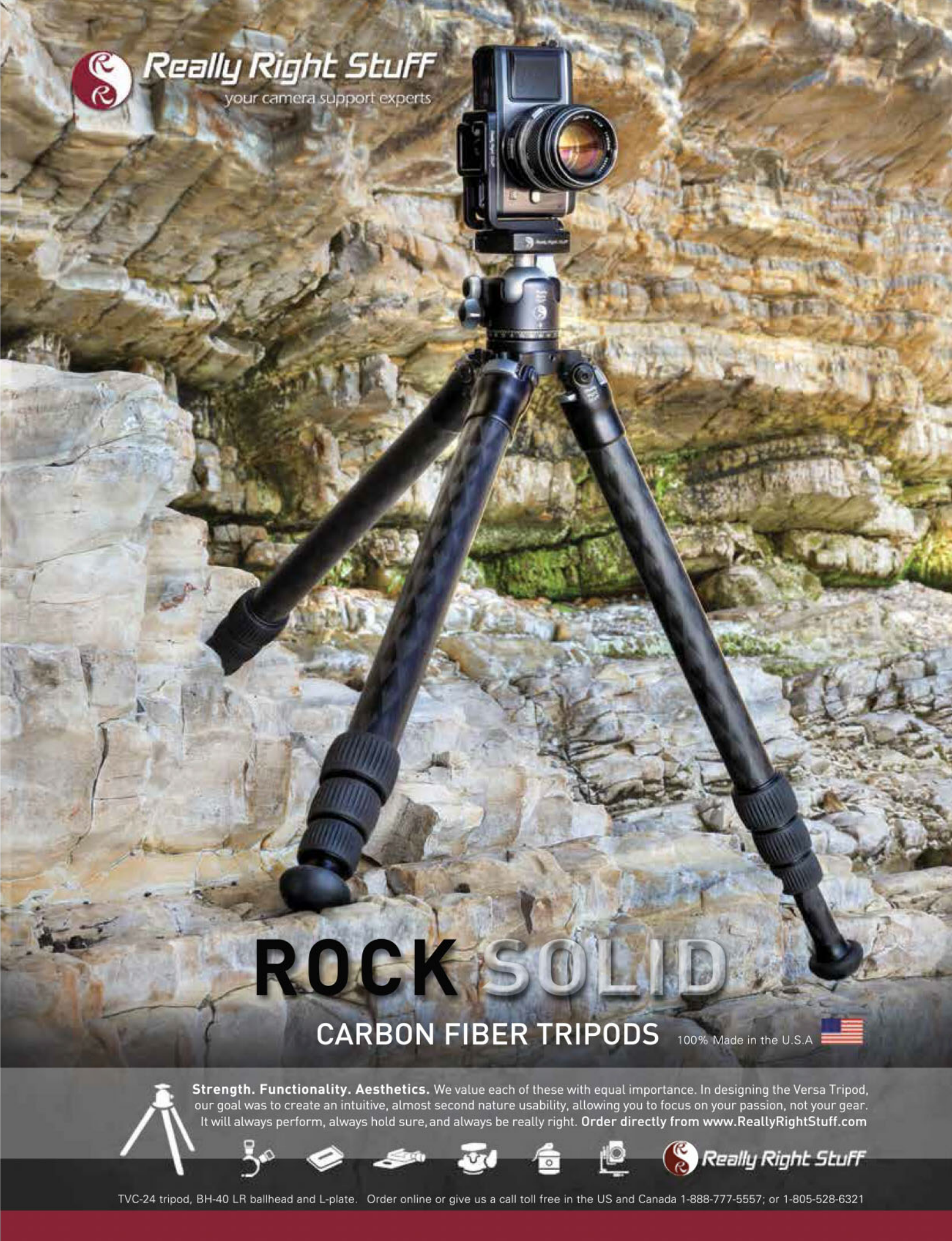
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In his "Fearless Genius" project (fearlessgenius.org), photographer Doug Menuez documents the digital revolution in Silicon Valley from 1985 to 2000. Menuez was given unprecedented access to the people who transformed our world, such as Steve Jobs and Adobe Systems Creative Director Russell Brown. This image is from the project; you can see more of his photography and read an interview in this issue. ABOVE: Russell Preston Brown in Costume. Mountain View, California, 1989. Many photographers and graphic designers resisted digital technology and heavily criticized Photoshop. Perhaps more than anyone else, Russell Brown deserves credit for the dominance of Photoshop by winning over the creative community with his Photoshop classes and lectures where influential photographers, graphic designers, and artists were invited to come learn the software.

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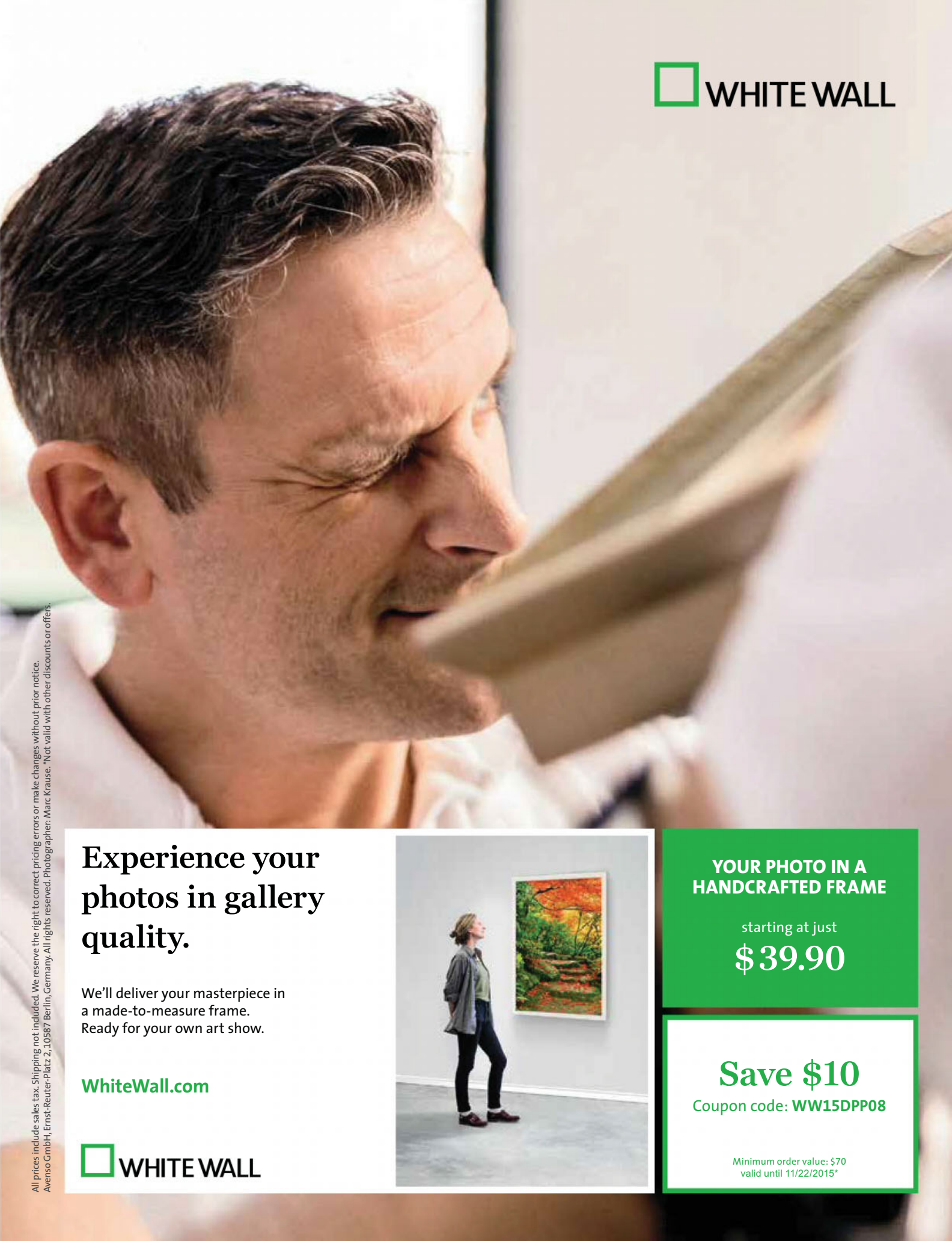
Brett Wilhelm

With clients including ESPN's X Games, Red Bull, *Sports Illustrated* and *The New York Times*, Brett Wilhelm specializes in action-adventure sports and environmental photography, with occasional travel and food photography assignments. Here, Jeremy Horgan-Kobelski competes in Stage 4 of the Keystone Big Mountain Enduro in Keystone, Colorado. You can see a portfolio of Brett Wilhelm's work in an upcoming issue of *Digital Photo Pro*.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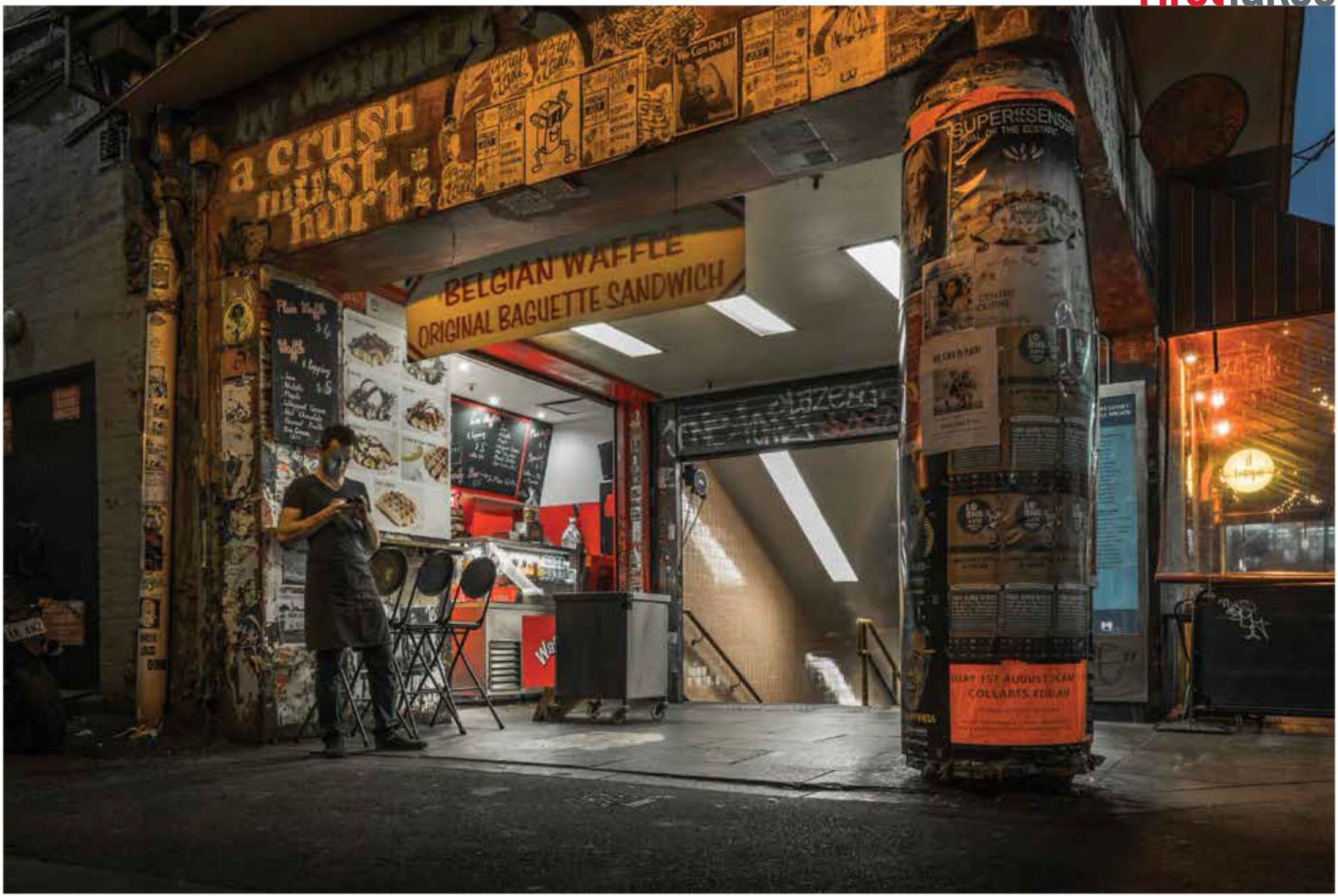

Mark Galer

Based in Melbourne, Australia, photographer Mark Galer is the Sony Alpha Ambassador for Australia and the Adobe Photoshop Ambassador for the Asia Pacific Region. An experienced educator and author, when Galer is not out shooting for editorial assignments, he's out shooting in the genres of street, travel, landscape and portraiture. This image of a nighttime scene in Degraves Street, an alleyway in Melbourne's City Centre, was captured with Sony's new a7R II. Galer has developed a community for Sony Alpha owners at his website, markgaler.com, and you can see a portfolio of his work in this issue of *Digital Photo Pro*.

Focal length: 600mm Exposure: F/7.1 1/640 sec ISO800 © Hiroto Fukuda

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New Tools Of The Trade

3 New NIKKORs >>

Nikon has announced three new lenses, all featuring the company's electromagnetic diaphragm for consistent exposures during high-speed shooting. The **AF-S DX NIKKOR 16-80mm *f*/2.8-4E ED VR** is for Nikon DX (APS-C) DSLRs (equivalent in field of view to 24-120mm on a full-frame camera), providing a versatile range of "walk-around" focal lengths (including portraits). It can focus down to 1.2 feet at all focal lengths, for a maximum magnification of 0.22X at 80mm. It measures 3.1x3.3 inches and weighs 16.1 ounces. The new **AF-S NIKKOR 500mm *f*/4E ED VR** and **600mm *f*/4E ED VR supertelephotos** are full-frame lenses (also usable on DX cameras) optimized for today's high-resolution sensors and high-speed DSLRs. They reduce weight considerably over their predecessors (the new 500mm *f*/4E weighs 6.8 pounds vs. 8.5 for the 500mm *f*/4G; the 600mm *f*/4E weighs 8.3 pounds vs. 11.5 for the 600mm *f*/4G). Both also feature improved AF tracking performance. List Price: $1,069.95 (16-80mm); $10,299.95 (500mm); $12,299.95 (600mm). **Contact:** Nikon, nikonusa.com.

AF-S DX NIKKOR 16-80mm *f*/2.8-4E ED VR

AF-S NIKKOR 500mm *f*/4E ED VR

AF-S NIKKOR 600mm *f*/4E ED VR

<< Tokina AT-X 24-70mm F/2.8 Zoom

Tokina's new **AT-X 24-70mm *f*/2.8 PRO FX high-performance zoom lens** was designed for today's high-pixel-count, full-frame sensors. Its 15 elements in 11 groups include three precision molded all-glass aspherical elements (one of Super Low Dispersion glass) to control spherical aberrations, along with three SD elements in the rear groups to minimize chromatic aberrations. Minimum focusing distance is 1.2 feet (0.21X maximum magnification). An SDM (Silent Drive Module) AF motor provides quick, quiet autofocusing. The lens also features Tokina's One-touch Focus Clutch mechanism, which allows you to switch between auto and manual focus simply by pushing the focusing ring forward (for AF) or pulling it rearward (for MF). The lens measures 3.5x4.2 inches and weighs 2.2 pounds. It's available in mounts for Canon and Nikon full-frame DSLRs (it can also be used on APS-C cameras). Estimated Street Price: $999. **Contact:** Kenko Tokina USA, kenkotokinausa.com.

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Rosco Silk 210 LED Softlight >>

Ideal for lighting broadcast studios and feature film sets, as well as for on-location use, **Rosco**'s new **Silk 210 LED Luminaire softlight** features daylight and tungsten LEDs and can deliver a high volume of light at adjustable color temperatures from 2800K to 6500K (e.g., 2400 lux at 1m at 5600K). The compact unit (21.9x13.9x3.9 inches, 13.0 pounds, including yoke) is rugged and easy to use, and can operate off AC power or optional battery power. Estimated Street Price: Please see dealer. **Contact:** Rosco, rosco.com.

<< Datacolor Spyder5PRO

Trust the colors you see on your monitor using **Datacolor**'s **Spyder5PRO**, an easy and precise way to calibrate your monitors so that the colors you're viewing are accurate and your prints look like what you see on screen. The industry's only seven-detector optical engine with on-screen assistance delivers color and shadow/highlight calibration in five minutes, and it takes just half that to recalibrate (preferably monthly) thereafter. An integrated room-light sensor alerts you when the ambient lighting conditions have changed, so you can recalibrate or adjust the ambient lighting. Estimated Street Price: $189. **Contact:** Datacolor, spyder.datacolor.com.

Canon Speedlite 430EX III-RT >>

Canon's new **Speedlite 430EX III-RT flash** is compact (2.8x4.5 inches, 10.4 ounces), yet powerful (ISO 100 GN 141 ft./43m, at the 105mm zoom setting). It offers several new features, most notably both radio and optical wireless off-camera operation. In radio mode, up to 15 camera/flash units can be fired from up to 98.4 feet away, and the 430EX III-RT can serve as master or slave. In optical mode, the flash can be operated from up to 49.2 feet (indoors). Other features include a new control dial, illuminated dot-matrix LCD panel, tilting/rotating bounce capability, high-speed sync and second-curtain sync. Estimated Street Price: $299.99. **Contact:** Canon, usa.canon.com.

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New Tools Of The Trade

DxO ONE Camera >>

Best known for its advanced image-processing technologies and DxOMark.com image-sensor ratings, DxO has introduced its first camera. The **DxO ONE** connects to an iPhone or iPad via the Lightning connector, and uses the smart device's screen as the camera monitor. Featuring a 20.2-megapixel, one-inch backside-illuminated CMOS sensor, the ONE delivers good performance in dim light (ISO range 100-51200), while its 32mm (equivalent) *f*/1.8 lens can produce shallow depth of field and beautiful bokeh for portraits. The camera can also do 1080/30p and 720/120p video. SuperRAW mode shoots four images in rapid succession and merges them (when connected to your Mac or PC) using the latest in spatial and temporal noise reduction for even better image quality. The ONE is 2.65 inches tall and weighs 3.8 ounces. Estimated Street Price: $599, including free licenses for DxO OpticsPro ELITE and FilmPack ELITE software (for a limited time). **Contact:** DxO, dxo.com.

<< Sigma 24-35mm F/2 DG HSM | A

Providing prime lens image quality in three popular focal lengths (24mm, 28mm and 35mm), as well as the ability to change focal lengths at the twist of a wrist, **Sigma**'s **24-35mm *f*/2 DG HSM | A** was designed for high performance and versatility for full-frame sensors (but can also be used with APS-C DSLRs). Its large-diameter aspherical element, which is a difficult feature to produce, plus an FLD element (equivalent in performance to fluorite) and seven SLD elements, minimize field curvature and spherical and axial chromatic aberrations. An HSM AF motor and a new AF algorithm deliver quick, smooth AF, along with full-time manual focusing when desired. The lens measures 3.4x4.8 inches and weighs 33.2 ounces, and takes 82mm filters. It will be available in Canon, Nikon and Sigma SA mounts. List Price: $999. **Contact:** Sigma, sigmaphoto.com.

Canon PowerShot G3 X >>

Canon's new flagship G-series compact camera, the **PowerShot G3 X** is a fine walk-around camera for a pro. It's the most rugged of the G-series, with dust and weather sealing about equal to that of the EOS 70D. It has a built-in 24-600mm (equivalent) *f*/2.8-5.6 zoom, which can cover a very wide range of shooting needs. Built-in intelligent image stabilization helps keep things sharper at all focal lengths. The G3 X features EOS-like control (a first for the G-series) and can shoot 5.9 fps with CAF. The 20.2-megapixel, one-inch CMOS sensor and DIGIC 6 processor optimize image quality at ISO settings to 12800. The 3.2-inch, 1.62M-dot LCD monitor can be supplemented with an optional 2.36-megapixel EVF (recommended for handheld shooting at longer focal lengths), and 1080p video at 60, 20 and 24 fps (with external mic and headphone jacks) and built-in Wi-Fi with NFC add versatility. Star Trail and Star Time-Lapse Movie modes will delight fans of night sky photography. Dimensions are 4.9x3.0x4.2 inches; weight is 24.0 ounces. Estimated Street Price: $999.99. **Contact:** Canon, usa.canon.com.

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Yuneec Typhoon Q500 4K >>

Quadcopter photo drones are popular these days, and **Yuneec**'s **Typhoon Q500 4K** is an easy-to-operate one, with some good features. First, its gimbal-stabilized CGO3 camera with 115° distortion-free lens can do 4K video, 1080p slow motion at 120 fps and 12-megapixel still images (DNG RAW or JPEG). It comes with two LiPo rechargeable batteries, and can stay aloft for about 25 minutes on a charge. No smartphone or tablet is required; the provided ST10+ Personal Control Station features a 5.5-inch touch screen, plus the ability to adjust video resolution, white balance, ISO exposure and shutter speed. Also provided is the SmartGrip for gimbal-stabilized handheld ground shooting. Videos and images are stored on the internal memory card and streamed in real time for viewing on the ST10+. Estimated Street Price: $1,299. **Contact:** Yuneec, yuneec.com.

<< Sony RX100 IV

Sony's fourth-generation **RX100 IV** continues a tradition of combining good image quality with a pocketable package, and then some. Its new 20.1-megapixel, one-inch Exmor RS CMOS sensor features a stacked configuration, with the pixel area on top, the high-speed signal-processing circuitry below and an on-chip DRAM memory chip below that. The 5X faster readout made possible by this design provides 16 fps full-res still shooting with no blackout (but focus fixed at the first frame), a top shutter speed of 1/32,000, and 4K video in-camera at 30p, super slow-motion up to 960 fps (40x) at 800x270, and full-pixel readout video with no binning or line-skipping. The tilting 3.0-inch, 1229K-dot external monitor is complemented by a 2.35-megapixel EVF. AF performance has also been sped up. Dimensions are 4.0x2.3x1.5 inches, and weight is 9.6 ounces. Estimated Street Price: $1,000. **Contact:** Sony, store.sony.com.

Laowa 15mm F/4 Macro Lens >>

The **Laowa 15mm *f*/4** is the world's widest-angle 1:1 macro lens. It takes in a 110° angle of view on a full-frame camera (85° on an APS-C camera), and will focus down to 4.7 inches (0.2-inch working distance), close enough to deliver a 1:1 magnification at the image plane. Superwide-angle macro photography opens up lots of new creative photo possibilities. The manual-focus lens is available in mounts for Canon, Nikon, Pentax and Sony A and FE digital cameras. Estimated Street Price: $479. **Contact:** Venus Optics, venuslens.net.

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New Tools Of The Trade

Panasonic LUMIX DMC-GX8 >>

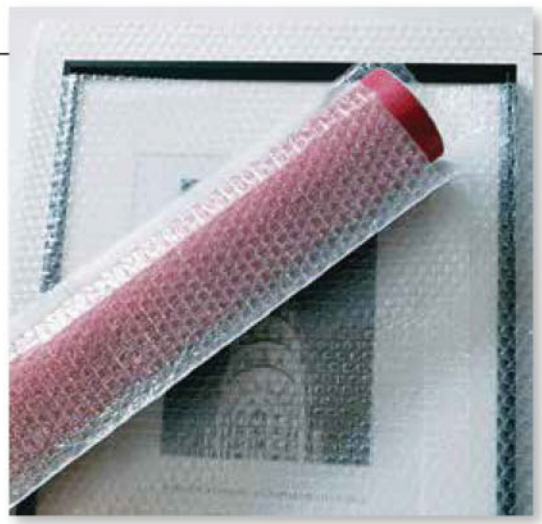
Panasonic's new **LUMIX DMC-GX8** is a pro-quality mirrorless Micro Four Thirds camera with a 20.3-megapixel sensor that can deliver 4K video at 30 and 24 fps and 1080p video at up to 60 fps, as well as 4K (8-megapixel) still frames at 30 fps. The magnesium body is sealed against dust and weather, and features both a 3.0-inch, 1040K-dot free-angle touch-screen monitor and a 2360K-dot tilting OLED eye-level electronic viewfinder. The camera features Panasonic's very quick DFD (Depth From Defocus) contrast-based AF system, and it can shoot full-res images at 6 fps with AF (8 fps with focus locked at the first frame). Sensor-shift image stabilization can work in conjunction with in-lens stabilization to provide Dual IS when compatible Panasonic OIS lenses are used. There's also built-in WiFi with NFC for easy connection. The GX8 measures 5.2x3.1x2.5 inches and weighs 15.3 ounces. Estimated Street Price: $1,199 (body only). **Contact:** Panasonic, shop.panasonic.com.

<< LensPen Action Camera Lens Cleaner

The **LensPen for GoPro lenses** (and other action cam optics) is smaller than the original LensPen, ideal for cleaning the small lenses on action cameras. Based on a carbon cleaning compound, the LensPen for action cams uses no liquids, sprays, tissues or rags. Just remove loose dust and dirt with the retractable natural brush at one end of the unit, then twist the cap at the other end and use the cleaning tip to remove any remaining dirt, grease or fingerprints. LensPens are environmentally friendly, good for 500+ cleanings, and have no expiration date. Estimated Street Price: $9.99.
Contact: LensPen, lenspen.com.

Gallery Pouch By Frame Destination >>

Using sheets of bubble wrap and tape to protect your prints for travel/shipping can be a pain, both wrapping and unwrapping. **Frame Destination** offers a simple solution: **Gallery Pouches**, which are sturdy bubble-wrap pouches custom-sized to fit your prints (or you can order from a wide range of standard sizes). You can choose from opening at a short edge or a long one, flap or Velcro® closure, in sizes from 4x4 to 52x156 inches. Prices vary with size and quantity; for example, two 16x21-inch pouches cost $13.02 each, which drops to $11.40 each if you order 20.
Contact: Frame Destination, framedestination.com.



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Visioneer's Gallery

Human Art

Spencer Tunick explores the social and the political, as he melds sculpture and performance in his series of images of multiple nude figures in public settings **By Baldev Duggal**

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The naked human form has been a staple of Western art since before the Greek and Roman eras. From the Renaissance, in which Michelangelo's "David" expressed the biblical and da Vinci codified human anatomy into perfect proportions, to Titian's and Ruben's depiction of the female nude in more sensual imagery, artists have imbued in the nude everything from society's ideal of perfection, the divine, the erotic, the naturalistic and even the rebellious. The nude, which began in early Western art as the idealized, slowly transitioned into even frivolous settings by the 18th and 19th centuries, when live models were used in less idealized and more naturalistic settings across art academies in Italy, France and England. It was the advent of photography that helped artists depicting the nude to disengage the live model from lengthy painting sessions and continue to develop nudity as art and become more inclusive and separated from its original idealization in the academies. Today, while there's no dearth of artists expressing through the nude across diverse media, the political and social context has mostly relegated the nude from the idealized to the shameful and embarrassing, with the subliminal impact of it being labeled "morally" wrong manifesting itself in the thriving pornography industry around the world.

In this milieu of unresolved cultural sentiments about nudity arose the iconic photographer Spencer Tunick, who two decades ago took the art world by storm by creating photographs that depicted multitudes of naked people in urban and natural settings around the world. Inspired by artists such as Carolee Schneemann and Yayoi Kusama, who documented the nude through photography and video, Tunick explored a new genre in which performance art, sociopolitical activism, design and photography came together to subvert the dominant paradigm in art of the nude with compositions of hundreds and thousands of naked subjects in a single composition, which become the landscape themselves.

In Tunick's installations, the viewer is greeted by a sea of human bodies in variations of skin colors, body types and poses, all of them volunteers baring their all to become part of Tunick's vision of collective self-expression and total acceptance of one's natural body. Tunick has treated the nude at a scale like it had never been approached before. What began as a small series of works with naked bodies defining a landscape in the '90s became one of the longest-standing political and social statements of freedom, rebellion and self-expression for thousands of people around the world.

Tunick has been jailed repeatedly for his photographs, and has played hide and seek with urban police while rallying thousands of people to turn up naked for his installations.

Reminiscing about his early start, Tunick comments, "I photographed my first work on the streets of New York City on the Lower East Side with one person in 1990. It was outside of my apartment on 3rd St. and Ave C. Between 1990 and 1994, I worked on a series of nude individuals on the streets. In the summer of 1994, I had over 40 people that wanted to pose for me. I had been scouting the United Nations as a location. Instead of just photographing one person there, I decided to invite all 40. Twenty-eight people eventually showed up to pose for my United Nations work in the summer of 1994. If I put out the word today to do that same work at the United Nations, I could get 4,000 people to show up. It takes a long time to gain the trust of the public, to have them trust you with their nakedness, their vulnerability and turning that into strength. I believe the nude en masse has evolved with me. Without the willingness of the public to participate, I would not be able to make my art. I am very fortunate and thankful."

The versatility of Tunick's vision keeps him circling the globe; however, more recently he has focused more on creating his work in natural settings than in his earlier urban works. "Since 2008, I have been working with nude groups in nature more often than the city," he notes, "from the North Shore of Maui, Hawaii, to the top of Aletsch Glacier in Switzerland. I've organized group works on the playa of the Black Rock Desert in Nevada and the arid desert of San Miguel de Allende, Mexico. I have also brought props and adornment into my group works by having participants pose with fabric, pillows, and even paint their bodies colors."

When asked about what aspects of his work are "digital," Tunick responds, "I still shoot film, but I do print digitally by Duggal drum-scanning my negative and printing from a digital file. Duggal has a very special HD printer that outputs my prints at 610 dpi, most labs output at 200 or 300. As far as shooting digitally, I will switch over when a camera company gets smart and makes a medium-format digital rangefinder. The artists and photographers that I know are all waiting for an affordable medium-format digital rangefinder that can be handheld in low light that is 50 megapixels or higher."

©Spencer Tunick/Naked Pavement

Recently, Tunick became a Featured Artist on YourArtGallery.com, a unique global community of artists and art buyers to share, buy and sell fine-art photography. The portal allows all artists to sell their work directly. "I made a special edition for this," says Tunick. "It's a good opportunity to share my work with a wider audience overseas. I have many new and young collectors that want to acquire my work overseas, and YourArtGallery.com streamlines the fulfillment process of getting the artwork to the client. It's very efficient."

YourArtGallery.com has partnered with Duggal Visual Solutions as its print and finishing provider. To view the images Tunick specially selected for this exclusive collection, please visit www.yourartgallery.com.

Tunick is one of my favorite artists, and I enjoy seeing large prints of his works in progress on our magnetic walls, where several strips of tests are done to get the colors and resolution perfectly right. I'm delighted to hear what he has to say about working with us. "Duggal has been like my second home for over 15 years now," says Tunick. "Everyone at Duggal, from the printers to the mounting team, works very closely with me to ensure that each piece is shipped out to the galleries or the collectors in pristine condition. Getting the color tones across the varying bodies in my photographs is of utmost importance. The team at Duggal understands my work very well and gives me the kind of attention I need to feel secure that my work is being produced in the best quality for the collectors I have around the world."

Tunick's highly prized, archival limited-edition fine-art pieces have been acquired by collectors around the world, who include Stéphane Janssen of Belgium, Spook Stream from Lake Charles, Louisiana, Julianne Moore, Chuck Close and recently Nicole Ehrlich, Lady Gaga's producer. DPP

Visit Duggal at www.duggal.com or check out the blog at www.duggal.com/connect.

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You can see more of Baldev Duggal's Visioneer's Gallery columns on the DPP website at **www.digitalphotopro.com**.

R/Evolution

Photoshop's Liquify Filter

This powerful tool offers amazing distortion controls for a creative approach to your postprocessing

By John Paul Caponigro

Undistorted

After Liquify

Awareness of the distortions produced by angle of view and lens choice is the beginning of using them creatively. Curiously, permission is the beginning of using distortion in postprocessing creatively. Many people have been told that it's inappropriate to do so. Why? Why accept an unintended mechanical by-product, but not a consciously intended effect? Why take such a powerful tool for expression off the table? Even the subtlest applications of distortion can produce powerful results. Once you understand what kinds of distortions are possible during postprocessing, you may even find yourself changing your angle of view during exposure.

Many Reasons For Distorting Images

There are many reasons why you might want to distort an image. Here are four:

1. Correct optical distortion that can be produced by many things, including lens choice, angle of view, motion, panoramic stitches, etc. You can choose to make the selection of a wide-angle lens less about distortion and more about including more.

2. Modify proportion; adjust the height and/or width of objects and/or areas. Just for starters, take off the 10 pounds that the camera adds on.

3. Change proximity; reduce or increase the spaces between objects. Make things feel more or less related.

4. Enhance or change gesture; make a leaning object more tilted or straighten it out. Think of this as adding the words "very" or "less" into a sentence.

The Liquify Filter Detailed

When exploring the many distortion tools in Photoshop, you'll find that the Liquify filter is one of the most powerful. The Liquify filter is so powerful that, when in use, it offers

its own toolbar and menus, somewhat like Camera Raw. To get the most of the Liquify filter, it's worth taking the full tour.

All of the nine brushes that Liquify provides can be controlled with the Brush Tool Options panel. There are four sliders. Size controls the diameter of the brush. Density controls the softness of the brush; a higher value produces a harder-edged brush. Rate controls the speed at which distortions occur when the brush is stationary; lower settings produce slower results, making them easier to control. Pressure controls the speed at which distortions occur when the brush is moving; again, lower settings produce slower results, making them easier to control. The Brush Tool Options panel also provides two check boxes, Stylus Pressure and Pin Edges.

Liquify's brushes make possible an impressive number of effects.

Forward Warp Tool (W)—The Forward Warp Tool will distort in any direction you stroke.

Reconstruct Tool (R)—The Reconstruct Tool allows you to use a brush to remove distortion before applying the filter, either partially or wholly. The Reconstruct Options panel will allow you to change Opacity of the brush or eliminate all distortions with a single click (Restore All).

Twirl Clockwise Tool (C)—The Twirl Clockwise Tool pushes pixels above the center of the brush right and down, and pixels below the center of the brush left and up. If you want to twirl in a counterclockwise direction, horizontally flip a layer before applying the distortion. The Brush Rate value is particularly useful here, as it controls the speed at which the distortion is applied; higher is faster.

Pucker Tool (P) and Bloat Tool (B)—The Pucker Tool moves pixels toward the center of the brush, while the Bloat Tool moves pixels away from the center as you click or drag on the image. This is pretty useful when you want to inflate or deflate something.

Push Left Tool (O)—The Push Left Tool moves pixels to the left when you drag the tool up and to the right when you drag it down. Drag clockwise around an object to increase its size or drag counterclockwise to decrease its size. To invert the direction, hold down the Option/Alt key.

Freeze Mask Tool (F) and Thaw Mask Tool (D)—The Freeze Mask Tool allows you to protect areas from changes by painting a mask over them. The Thaw Mask Tool allows you to refine a mask by erasing portions of it.

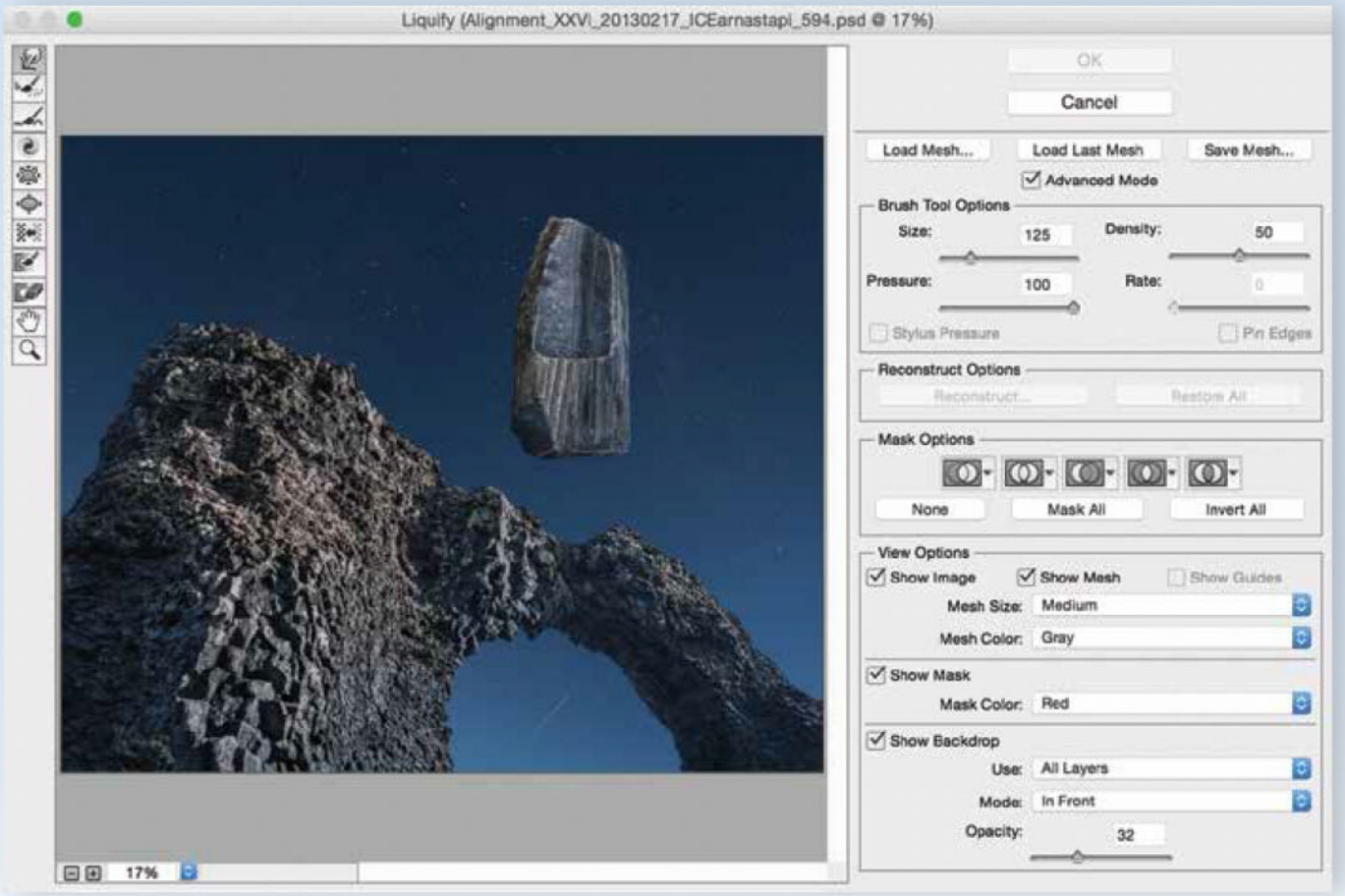
The View Options panel allows you to make the mask invisible or visible with Show Mask in one of seven Mask Colors.

The results Mask Tools create can be further modified with the Mask Options panel. It has three buttons: None removes all masking; Mask All places a mask on the entire area; Invert All inverts the current mask. It also has five drop-down menus: Replace selection; Add to selection; Remove from selection; Intersect with selection; Invert selection. All five allow you to select Selection, Transparency or Layer Mask.

Hand Tool (H) and Zoom Tool (Z) work identically to those in the Photoshop toolbar, allowing you to move around Liquify's preview fluidly.

Every distortion made can be saved using Save Mesh. You then can apply that distortion again using Load Mesh, either on another layer or another file.

View Options provides you with many ways to see the image, mask and mesh. Three check boxes allow you to Show Image, Show Mesh and Show Guides. You can change the size and color of the mesh with Mesh Size and Mesh Color. You can show Check Show Mask to see the



The Liquify Filter

mask currently in use and use the Mask Color drop-down menu to choose one of seven colors for the mask display. Check Show Backdrop to see layers other than the one being distorted; doing this can sometimes provide invaluable visual aids that will help you achieve more pleasing distortions. The Use drop-down menu lets you choose either All Layers or individual layers. The Mode drop-down menu lets you choose between In Front, Behind and Blend. And, finally, there's Opacity.

Remember, you can distort a layer mask just as easily as you can distort a layer.

>> **More On The Web**
John Paul Caponigro's in-depth instructionals on image-processing and printing techniques are available as an extensive archive online at **digitalphotopro.com/technique/revolution**.

Making Distortion More Selective

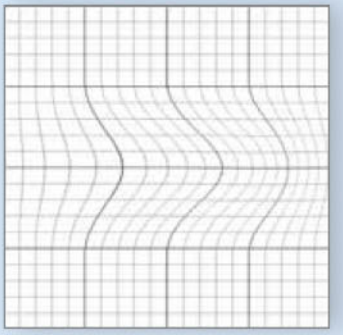
You can apply the Liquify filter even more selectively using layers. Duplicate a rasterized layer, apply the Liquify filter and add a layer mask. Or, apply a Smart Filter to a Smart Object. Currently, there is only one mask for all Smart Filters applied to a Smart Object, so if you need to make different masks for different filters, first duplicate the Smart Object.

When distortions are applied to objects in an image, the things surrounding them are also distorted. Try distorting a duplicate layer, masking and possibly increasing scale to overlap underlying distractions. In some cases, you may even find it helpful to remove the object to be distorted from the background layer; try using Content Aware Fill. These are two among many ways to have the background remain undistorted when you distort an object.

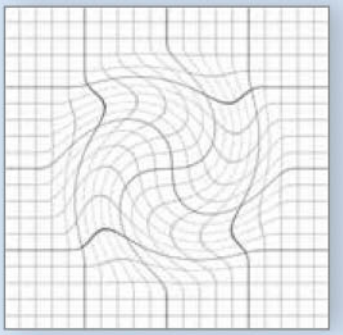
If you find that gaps or tears occur during distortion, these can be retouched by cloning. I recommend you place major retouching on a separate layer.

Rather than distort a precisely selected area, it's advisable to distort areas larger than you plan to use and then mask off the excess.

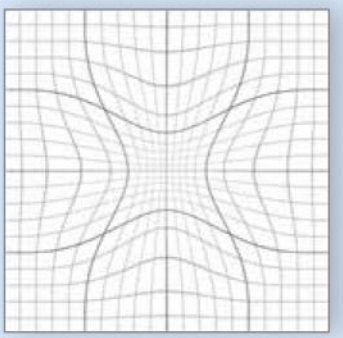
The Liquify filter is so powerful that it's easy to quickly produce gross distortions. Don't write it off. Instead, use a little more finesse. Use it with care, and



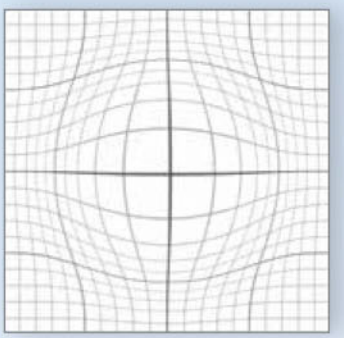
Liquify's Forward Warp



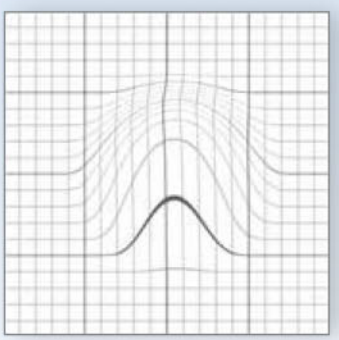
Liquify's Twirl



Liquify's Pucker



Liquify's Bloat



Liquify's Push Left

you can do amazing things, like fine-tuning portraits with subtle, but very significant moves, such as shifting the angles of the corners of a mouth and opening eyes a little wider.

The Liquify filter excels at localized irregular organic distortions. Other distortion tools in Photoshop are better for broader planar perspective adjustment, such as Tranform, Upright, Lens Correction and Perspective Warp.

Conclusion

Photoshop's sophisticated distortion capabilities are relatively new to photography and so is the mindset of using them to photographers. Both are worth acquiring. Everyone can find a use for them, at one time or another, if not on every image. As every photographer uses distortion to one degree or another, ultimately what separates photographers is not whether they use distortion, but when, how and why they use it. The same tools can be used to achieve entirely different effects. There's a world of difference between using distortion to remove process artifacts for more accurate representations, using distortion to aesthetically refine the formal qualities of images and using distortion to expressively interpret subjects. Intent is everything. Practice is a reflection of intent. Simply asking yourself how far you are and aren't willing to go and, finally, why, will help clarify yours. Consider these questions seriously, and you'll find your vision will grow stronger and clearer. DPP

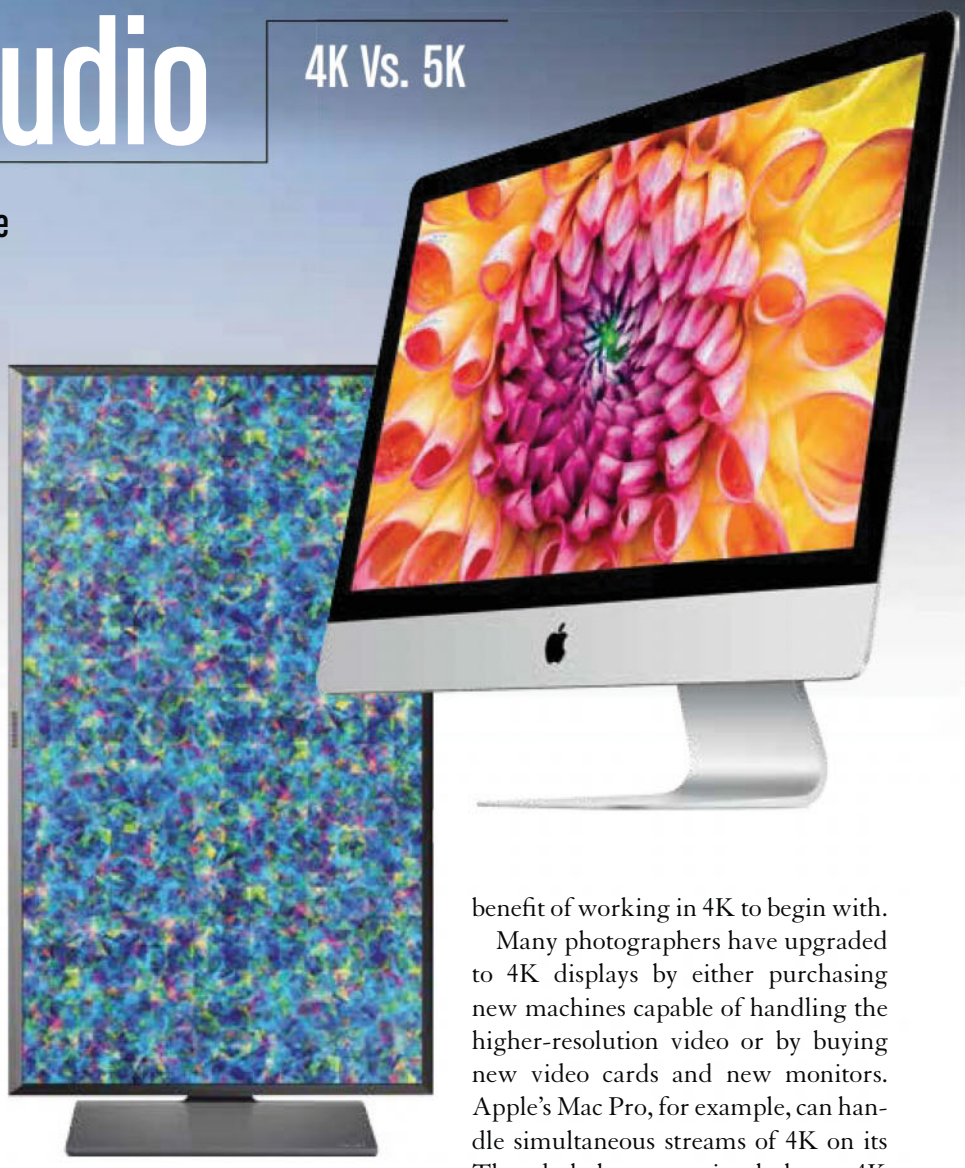
John Paul Caponigro, author of Adobe Photoshop Master Class *and the DVD series* R/Evolution*, is an internationally renowned fine artist, an authority on digital printing, and a respected lecturer and workshop leader. Get access to a wealth of online resources with his free newsletter* Insights *at www.johnpaulcaponigro.com.*

Hi-Tech Studio

4K Vs. 5K

What's the best way to take advantage of today's new display standards?

By David Schloss



Spend any time in a camera store (or the camera department of a big-box store), and you'll notice that more and more cameras are touting their ability to capture video in 4K. Where HD video capabilities were a selling point just a few years ago, full-blown 4K has swept the market.

What's The Big Idea?

Video standards are named according to the number of pixels a device can record or display on the longest dimension. (This is an oversimplification, as video standards are convoluted and confusing, but it works for this discussion.) An HD display is 1080 pixels across, and even the smallest-resolution computer display these days has a higher resolution.

The more pixels a display has available, the more detailed and sharper the images it displays can be. An HD display has two million pixels on the longest side, but a 4K display has 3820 pixels, which means you end up with eight million total pixels for a resolution that's four times greater than HD.

That's good for photographers for a number of reasons. The first is that 4K video is astoundingly detailed, which means that videos captured at 4K have a greater level of detail and clarity than even the best HD video. It's also good because 4K footage is more future-proof than HD, since 4K TV sets will start to become the norm in stores by this holiday season and HD will start to disappear.

4K video capabilities are important to the still photographer, as well, because 4K provides enough resolution to enable photographers to shoot video and then pull an 8-megapixel image from the sensor. While this isn't the workflow for everyone, it's a remarkable approach to pulling stills from motion and having the best of both worlds on a shoot.

Even without a 4K workflow, a 4K display will provide the photographer with an image that has more detail and more clarity than even the best HD displays, which makes editing more accurate and more efficient.

The problem is that most photographers today lack the equipment needed to properly display 4K images. HD monitors can display 4K, but it's either scaled back to work at HD resolution, or resized smaller to have more detail, eliminating some of the benefit of working in 4K to begin with.

Many photographers have upgraded to 4K displays by either purchasing new machines capable of handling the higher-resolution video or by buying new video cards and new monitors. Apple's Mac Pro, for example, can handle simultaneous streams of 4K on its Thunderbolt ports—simply buy a 4K monitor and you're in business.

But Apple has a more interesting offering for photographers, an iMac with a Retina 5K display, which leapfrogs over 4K to provide a higher-resolution display. The question is—is it worth it?

iMac On Steroids

The iMac has always been a workhorse machine, offering a nice mix of performance and convenience aimed at the mid-level market. The iMac has been for offices and for enthusiast photographers, but professional shooters have tended to gravitate toward the Mac Pro and a high-end display.

But the iMac with Retina 5K display (we're going to just call it iMac 5K going forward) radically changes

TOP, LEFT TO RIGHT: Samsung U32D970Q UHD 4K Monitor; Apple iMac with Retina 5K Display

all that with a best-in-class display that shatters all previous performance levels and makes the iMac 5K the perfect machine for the top-end pro.

Not only did Apple manage to combine a groundbreaking display inside the iMac chassis, they somehow managed to produce the complete system at a price that's the same as the competing 5K display by themselves. The Dell UltraSharp 27", for example, has a street price of around $1,800, just a tad lower than the entry-level iMac 5K.

Pro Vs. Pro

Typically, the iMac lags a bit behind the top-end Mac Pro in performance, and that's the case with the new iMac, sort of. For a small increase over the base model, the iMac 5K can come with quad-core i7 processors running at 4 GHz. The Mac Pro base model has quad-core Xeon processors running at 3.7 GHz. The Xeon is a slightly older chip, and it's designed to be more stable than the i7, but it runs just a hair slower.

How To Go 4K

You want to work in 4K resolution, but you don't want to ride the bleeding-edge with the new iMac 5K. That's fine, since a full-on 5K workflow is still a few years away, and you'll get an enormous boost creatively and production-wise by jumping to a 4K display today.

The first step is to make sure you have a system ready to handle 4K video. If you're using an all-in-one machine like an iMac, you'll need to upgrade to the iMac 5K to get a display that can handle 4K video.

If you have either a Mac or Windows-compatible machine, you'll need to check the graphics card and be sure you're on the newest version of operating system for compatibility with the displays and with your applications.

For Windows users with desktop systems, and for Mac users, prior to the current "trashcan" model of the Mac Pro, upgrading to 4K video is just a matter of pulling out an old video card, inserting a new one and making sure the drivers are up to date. 4K-capable video cards start at around $300 and ramp up to around $1,500, depending on the performance of the card.

Since a decent 4K video card comes with a price tag of around $600, many photographers with older video cards would be better off putting that money into a newer computer, and getting the benefits of the faster CPU and RAM that the computers offer along with the newer card.

The new Mac Pro and most new Windows desktop setups come with 4K support already provided by their video cards and OS, so upgrading to 4K is simply a matter of connecting the right display.

While a year ago there were just a few 4K displays, today you can find dozens of models with just a quick search online or in store, and the prices continue to plummet for 4K displays. Entry-level monitors start at around $400 and models from Acer, ASUS and Samsung are common at this price point, and these displays are usually in sizes of up to 26 inches. They make a good secondary display, complementing a larger, main HD display.

Image quality and color accuracy at the $400 level aren't on par with the top-end 4K displays, such as the 32-inch **Samsung U32D970Q** (around $1,500) and 24-inch **Dell UltraSharp UP2414Q** ($1,000). These displays have some of the best color fidelity and sharpness in the field, and can be used for soft proofing.

In 5K computer monitors, there is but one choice (currently). The 27-inch **Dell UltraSharp UP2715K HD** has a price that's just a few hundred dollars less than the iMac 5K, but it boasts 99% Adobe RGB coverage (the iMac 5K only hovers around 78%), better than most 4K displays on the market.

Even with the Dell monitor, there are just a few systems that can handle it. The Mac Pro and the MacBook Pro can both power the 5K display, and many Windows systems with high-end graphics cards, as well. Entry-level or even mid-level systems don't have enough graphics power to use a 5K display.

That means that the iMac is actually faster than the Mac Pro for many of the types of daily tasks that the photographer might face, but not for retouching. And it's considerably cheaper and has a built-in display, to boot.

Performance Factor

While the iMac is traditionally a bit anemic when compared to the Mac Pro, the iMac 5K is not. You certainly can max out a Mac Pro with more RAM and with faster graphics, but when comparing the base or low-end models of both systems, the iMac 5K is surprisingly fast.

And the display—if you've had a chance to work on a computer hooked up to a 4K display, you immediately realize the inadequacy of HD, but once you see Lightroom or Photoshop in 5K, there's no going back.

Courtesy of Dell Inc.

Dell UP2715K UHD 5K Monitor

GPUs?

There is an issue with the iMac and a 5K display, however, which is that the graphics processor in the iMac is limited in performance relative to that in the Mac Pro. The GPU is responsible for graphics-heavy tasks in programs that are optimized to use it, instead of using the CPU. Photoshop and Lightroom are using more of the GPU and less of the CPU each revision.

Because of its small size, the iMac uses components designed for laptops and other mobile devices. All models of the Mac Pro come with dual graphics cards while the iMac has the single chip. Even though the GPU of this new-generation processor is equal to a mid-level desktop card, there are still two of those processors in the Mac Pro and one in the iMac.

In fact, it looks like Apple had to jump through a few hoops to make a 5K display work with the graphics processor in the iMac because the GPU it uses was designed "way back" in 2012, when there weren't yet such things as

5K displays. Apple's solution was to hack the processor with a custom solution that gets just enough pixels out to drive the display.

In our tests, the iMac 5K was just powerful enough for most photographic tasks, but bogged down (compared to the mid-level Mac Pro) when performing graphics-intensive retouching and editing in Photoshop and Lightroom. By comparison, the Mac Pro never hiccupped while editing images, even when connected to both a 30" Cinema Display and a Dell 24" 4K monitor at the same time.

So what's a professional photographer to do?

The iMac 5K is a very, very compelling machine. It's the first all-in-one with a 5K display, but is also one of the first 5K displays on the market, too. The graphics processor is state-of-the-art for mobile processors (but still lags behind desktop systems) and the performance of the system is excellent.

It's not a Mac Pro, though, and while it has a very attractive price tag and a very robust set of features, it may not be the best bet for the photographer, at least not yet.

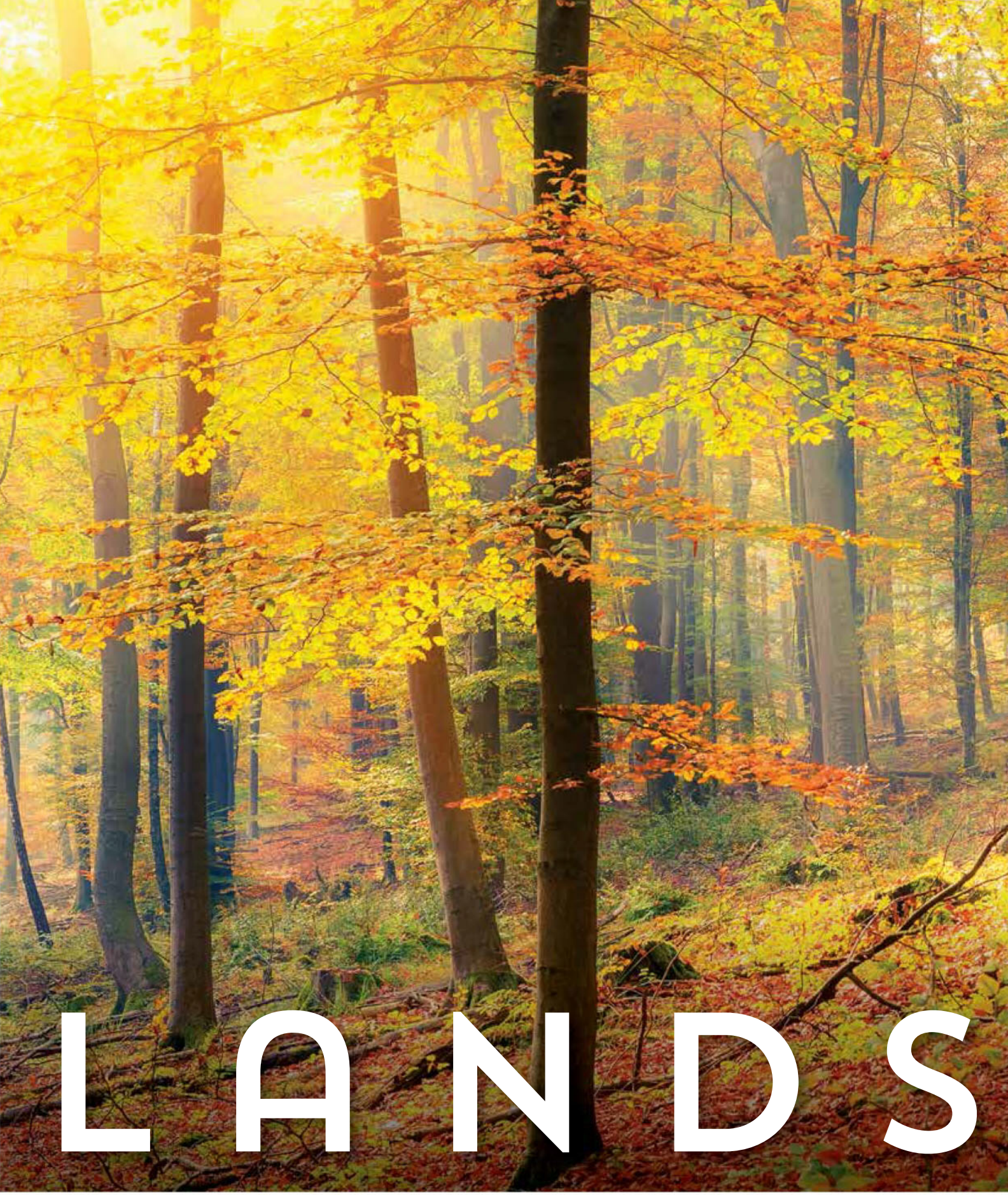
Certainly, enthusiast photographers or those without a high client volume would really do well with the iMac 5K, as has always been the case with the iMac line. With this model, though, they will end up with the extra bonus of one of the best displays on the market.

Very high-end studios might want to pick up the iMac 5K as an additional tool for evaluating and editing images—after all, if you're just working on one photo at a time on the iMac, you're unlikely to tax the processors.

In any case, the iMac 5K really ushers in a new era for the digital photographer, one in which the computers targeted at the mid-level consumer can prove to be a better choice than the "professional" tool they would have needed just a few years ago. DPP

Even without a 4K workflow, a 4K display will provide the photographer with an image that has more detail and more clarity than even the best HD displays, which makes editing more accurate and more efficient.

You can follow David Schloss on Twitter or Instagram @davidjschloss



LANDS

From intimate scenes to majestic vistas, share your best landscape photography for your chance to win prizes and get published in *Digital Photo* magazine.


2015 PHOTO CONTEST
CAPES
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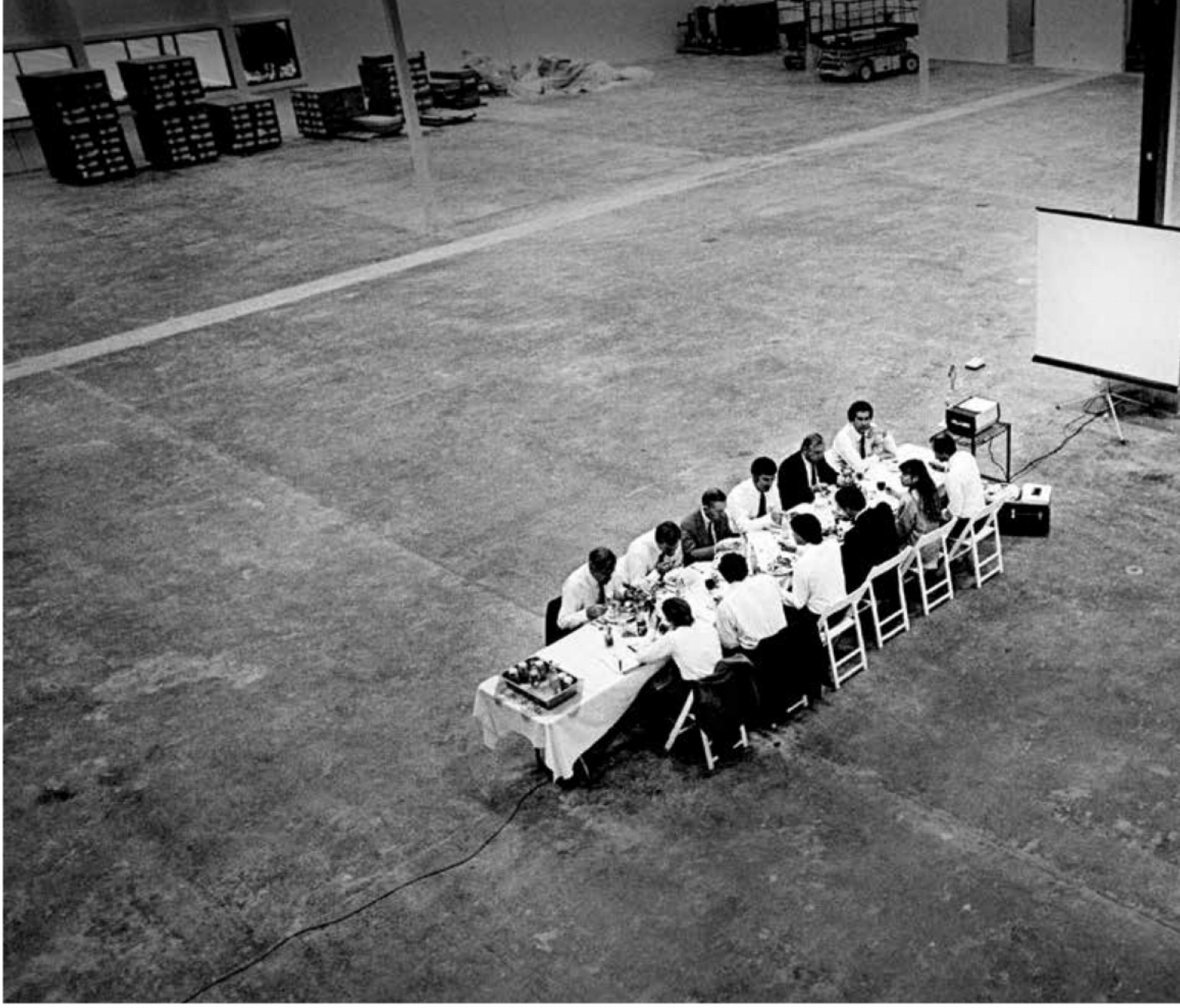
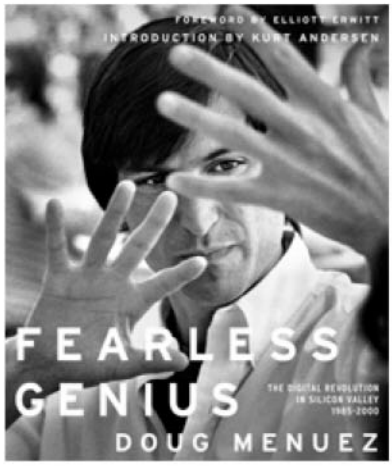


THE FEARLESS

By David Schloss >> Photography By Doug Menuez

THE DAY ROSS PEROT GAVE STEVE JOBS $20 MILLION. FREMONT, CALIFORNIA, 1986.
Steve was a consummate showman who understood the power of a compelling setting. This was never more apparent than at this incongruously formal lunch he hosted for Ross Perot and the NeXT board of directors in the middle of the abandoned warehouse he planned to turn into the NeXT factory. He told Perot that they were building the most advanced robotic assembly line in the world and that "no human hands" would be assembling hardware. He predicted that NeXT would be the last billion dollar a year company in Silicon Valley and that they would ship ten thousand computers a month. Perot, who was then championing a movement to reform education in the United States, was blown away by the presentation and invested $20 million, becoming a key board member and giving NeXT a crucial lifeline.

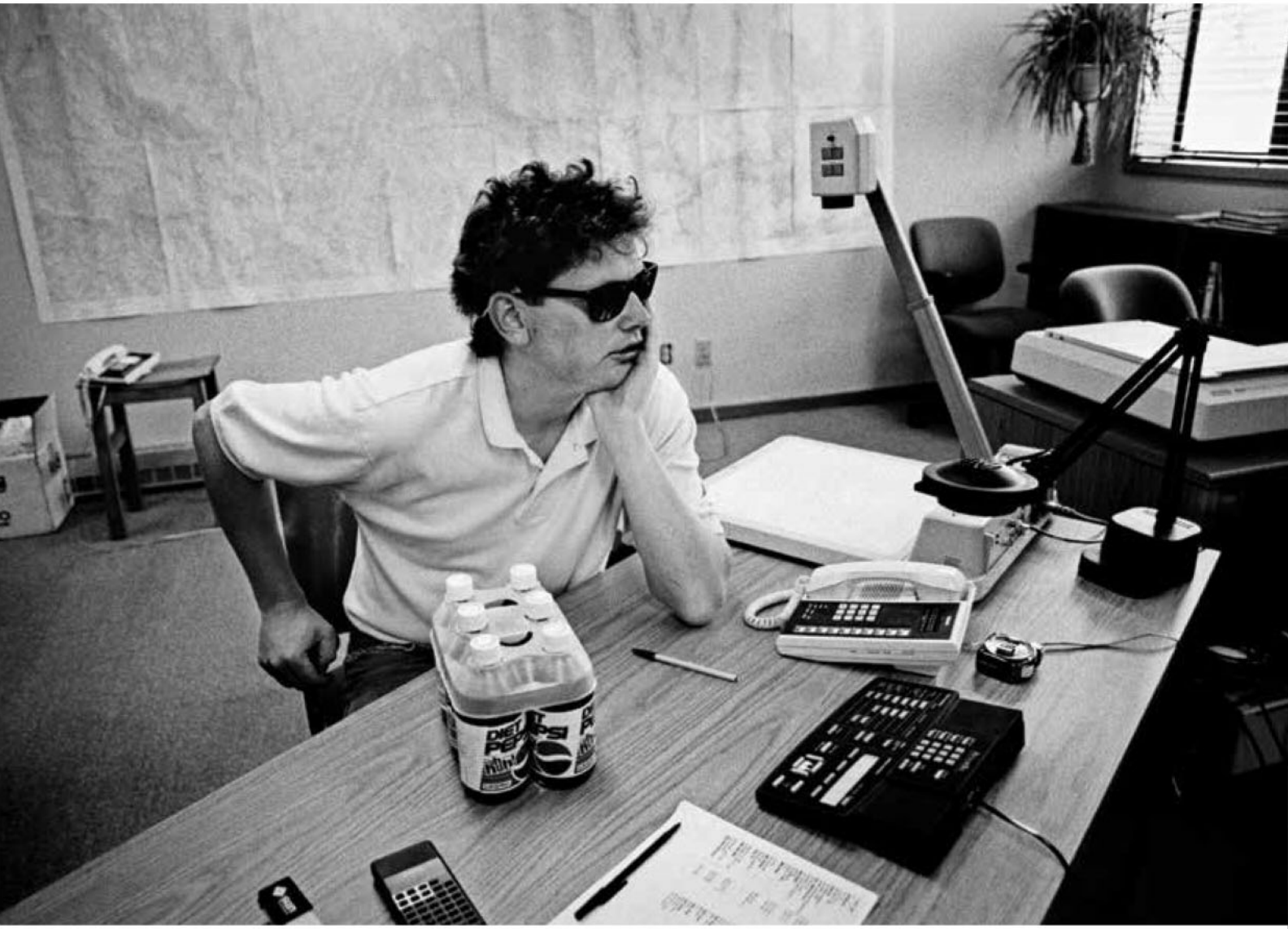


ACCLAIMED PHOTOGRAPHER **DOUG MENUEZ** DOCUMENTS THE BOOM TIMES OF SILICON VALLEY IN THE 1980S, AND THE RESULTING PROJECT SAYS A LOT ABOUT THE TIME, AND OUR CRAFT TODAY

GENIUS PROJECT

In the mid-1980s, photographer Doug Menuez was looking for something hopeful at which to point his lens. Then in his mid-20s, Menuez was a burgeoning photojournalist covering some of the darkest subjects of the times. He had been documenting the emerging AIDS crisis, homelessness, the war on drugs and countless global crises for magazines including *TIME, Newsweek, Fortune, LIFE, der Spiegel* and others. Menuez was regularly flying around the globe to cover some of the most heartbreaking subjects and had just completed coverage of what he calls "a fairly devastating famine in Ethiopia" when he knew he needed a change.

"When you're covering this [material]," says Menuez, now 57 and a renowned editorial and commercial photographer, about the period, "you start to think, 'What can I do to contribute to this?' You wonder how you



BILL JOY IS WORRIED ABOUT THE FUTURE OF THE HUMAN RACE. ASPEN, COLORADO, 1998. Legendary programmer and cofounder of Sun Microsystems, Bill Joy. In 2000, Bill published a manifesto in Wired magazine that stunned the technology world by challenging the accepted wisdom of unrestrained development. He warned that without thoughtful controls the convergence of our most powerful twenty-first-century technologies might destroy the human race.

can leave a mark. I was looking for something more positive for myself."

The Digital Revolution, In Pictures

In 1985, Steve Jobs was famously forced out of Apple, Inc., and set out to start NeXT, the company that would eventually be brought back into Apple, help pull it out of its rapid decline and create the digital world we all know today.

"I was impressed because he announced he was going to build a computer to transform education," recalls Menuez. "I knew that education was at the root of every [social] issue. I wanted to understand more about that. I wasn't into technology. I didn't give a shit about it, but part of the reason why is that I couldn't get access. The [people in Silicon Valley] had the best PR in the world, and they had a bubble around them."

Menuez was introduced to Jobs and pitched the idea for what would become the Fearless Genius project, a remarkable all-access, behind-the-scenes look at the digital firestorm that transformed our world. The resulting work (fearless genius.org) is comprised of more than

EXERCISE BREAK AT INTEL FAB 11X. RIO RANCHO, NEW MEXICO, 1998. Workers inside Intel's largest chip fabrication plant exercise and stretch as part of their break time. The plant is a giant, sterile clean room, so protective "bunny suits" must be worn throughout the facility to prevent contamination from skin and hair. These workers produce five chips a second, twenty-four hours a day. Many of them are from the nearby Pueblo tribe and maintain their traditions when not working with new technology. After work, many tend their corn and bean fields with their families before dinner.

BILL GATES SAYS NO ONE SHOULD EVER PAY MORE THAN $50 FOR A PHOTOGRAPH. LAGUNA NIGUEL, CALIFORNIA, 1992. Microsoft CEO Bill Gates. He was completing construction of his high-tech house in Seattle, whose interiors would feature screens with continuously changing displays of images. Licensing images on the scale he envisioned would be expensive, so he began to think about how to own or control vast archives of images. This led to the idea of forming a stock photography business originally called Continuum, tasked with developing large image libraries for online distribution. Later, not long after initial bad press, the name was changed to Corbis.

STEVE JOBS RETURNING FROM A VISIT TO THE NEW FACTORY. FREMONT, CALIFORNIA, 1987.
wAlthough Steve could be extremely rude, critical, and occasionally even vindictive, he also was incredibly joyful, with an infectious grin and energy that was irresistible. In the early days at NeXT he would often come bounding in, hungry to get to work. Still, there were not too many unrestrained moments of hilarity such as this one, when Steve was riding back from a visit to the newly chosen factory site with the company employees in an old, rented yellow school bus.

250,000 images, and includes video, an upcoming television and web series, a traveling exhibition and conference.

But, in 1985, it was just an idea, one, it turns out, Jobs already had himself.

Menuez had read the famous 1981 book "The Soul of a New Machine" by Tracy Kidder, which chronicled the intense competition between DEC and Data General to create a new computer and the tremendous pressure faced by the two teams as they worked around the clock to invent the next generation of technology.

"My [news] photographs might have changed the world," says Menuez. "But these guys were going to do it—clearly, there was a revolution going on. We think we're in a very innovative era now, but it's all iterative. Every product we use, whether it's in outer space or your home, it was developed by these people in the '70s, '80s and '90s.

"By 1985, when I got [to Silicon Valley], there was a billion [dollars] in outside investment coming in. A decade earlier, it was less than $10 million. It was like a fire hose coming in to fuel a river of fine talent. Steve was the avatar of a new generation coming in and merging with the space-race generation, and they ripped it up and started developing.

"Because of what happened then, we can now do digital video and photography. The initial work on digital photography started in the 1970s, but all the work with color space, Kodak's early work with sensors and cameras, Photoshop—they all came together with this incredible firestorm of innovation that led to the products that you can now hold in your hand."

Menuez was introduced to Jobs and pitched him on the idea. "I said that I wanted complete access to document

the 'human side of technology.' Steve said yes—he gave me complete access. What I didn't know was that he already had the same idea and was already looking for a person to do this."

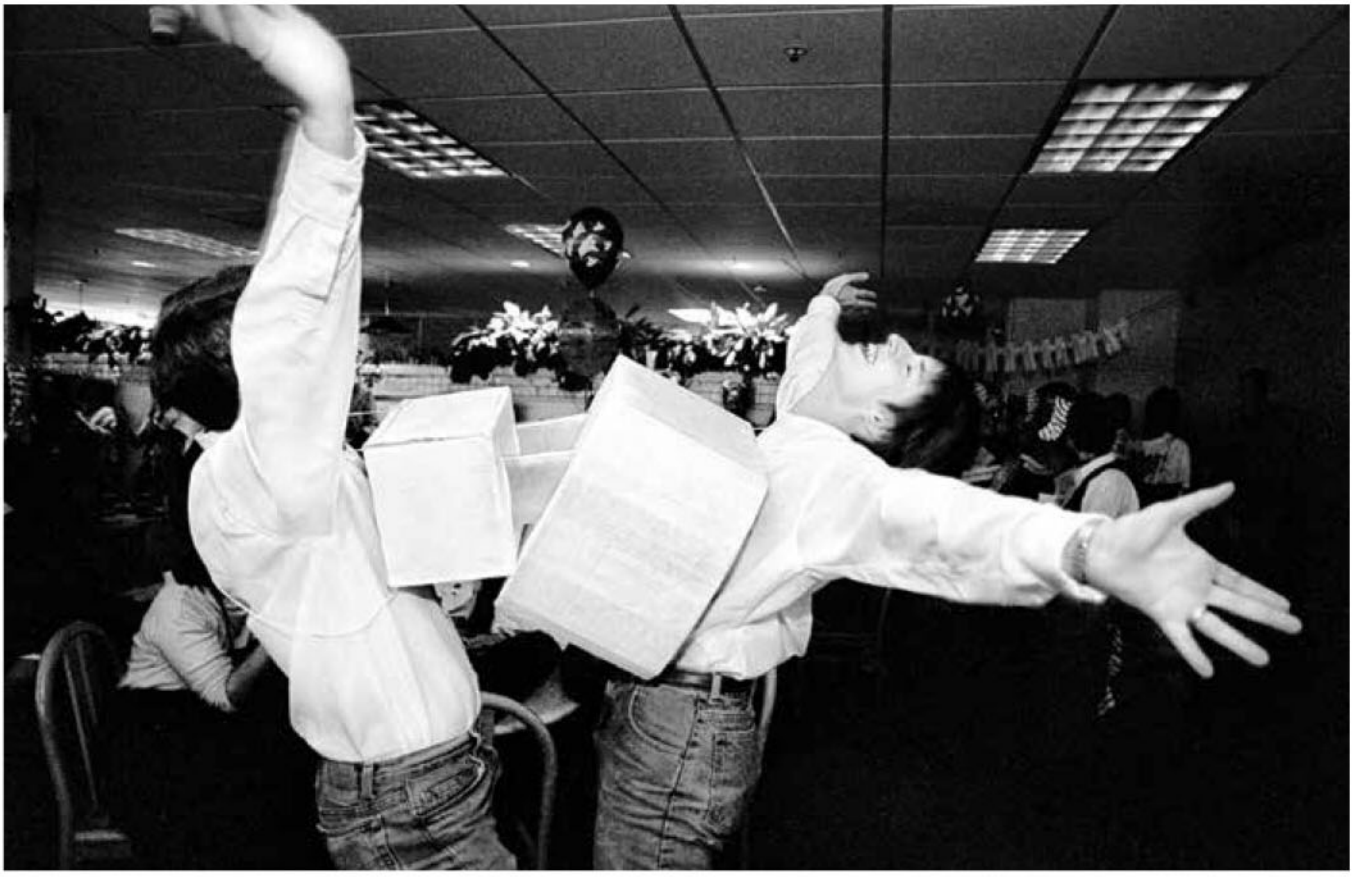
To help bring more of that human side of technology to the work, Menuez decided to shoot the burgeoning digital revolution with black-and-white film. "Honestly, people were skeptical," he explains of his choice to use TRI-X and then later T-MAX to capture the new digital revolution. "Everything then [in magazines] was in color."

Notes Menuez, "My editor at *LIFE*, Peter Howe, thought black-and-white was an interesting idea. We were going into these environments with fluorescent light and cubicles. I wanted it to be like a visual anthropology, like I had discovered a hidden tribe. When you go to black-and-white, you humanize people, you can see past the clichés, you can see how hard they work, you could see the sacrifice."

Tracking The Tribe

Menuez focused on the project for around three years, capturing images from 1985 through 1987 in the same way that a photographer embedded with the White House might—sitting through staff meetings, attending employee briefings, and capturing the subtle and sometimes ridiculous parts of each day that would have been lost to history without someone there to chronicle them.

Even after Menuez "finished" the bulk of his project, he kept returning. "Steve left the door open and I kept coming back into it. I became obsessed with these people, so I went on and did Adobe and Apple and Cisco, I even did the VC [venture capital] side of things. And some companies were



GEEK SEX. MOUNTAIN VIEW, CALIFORNIA, 1991. Real-life boyfriend and girlfriend act out a rudimentary electrical metaphor at an Adobe Halloween party. Technology workers were notoriously socially inept and often shy, especially male engineers. Fantasy games and role playing were popular, and any opportunity to dress in costumes was welcomed. This couple repeated the ritual all over the company to the delight of fellow workers.

SUSAN KARE IS PART OF YOUR DAILY LIFE. SONOMA, CALIFORNIA, 1987.
Susan Kare's playful icons and user interface design have impacted the daily lives of hundreds of millions of people around the world. Susan was part of the original Mac team and designed the original Mac icons and much of the user interface. Leaving Apple with Steve after his ouster, she became a cofounder and creative director at NeXT Computer, where she oversaw the creation of its icons and logo, working with the legendary Paul Rand.

commissioning me. I would do it like an art project; it would be a six-month deal. Other companies I called and begged to come and [to cover] because the company was cool."

Outwardly Digital, Inwardly Analog

Menuez shoots digitally today, but thinks in an analog way. "For me, it's important to hold onto the analogy of film because that's how our brains work." He naturally enjoys the benefits of digital photography, but still shoots as if he were working with film, taking images and composing without constantly checking the LCD.

Digital cameras are also something he never thought he'd shoot professionally, based on his experiences in the 1980s in Silicon Valley and being in the rooms when the first digital cameras were born. "When they first showed me these cameras," Menuez recalls, "I said, 'There's no way I'm ever going to use a digital camera.' They were too simplistic and too radically different at the same time.

"Because with digital [cameras] you can do so much, so fast, with the chip doing so much for you, it's hard to keep your head in the game and keep focus," he says. As a result, Menuez likes to shoot as if there were film in his camera, stopping only occasionally to check to see what he has captured.

"I think those days when you were in the darkroom and you were watching the timer, there was a lot of meditation and thought and care," notes Menuez. "Digital compresses time and puts pressure on you in other ways."

The Birth Of A Genius

When the dot-com burst happened around 2000, Menuez knew that the original spark he was in Silicon Valley to capture had gone out. "You could see around 2000 there was a lull. It was as good a place to stop as any. As far as a story goes, it's a great arc."

While he stopped shooting in 2000, the work wasn't yet finished. He had amassed a collection of more than 250,000 negatives—a massive archive, by any means, but more daunting because it was all film-based. By the time Jobs died in 2011, the world had started to turn a nostalgic eye toward the early days of Silicon Valley. Menuez started to get the project moving toward a final, cohesive form.

Stanford's library acquired the collection (and the rest of his archive, as well), but the first task was to get the images all scanned. "Most people don't know how to scan film," Menuez explains, so they spent time looking for a photo editor and someone to

handle the process of getting the best out of the original film. Renowned photo editor Karen Mullarkey came on to the project to help get the collection in shape, and *National Geographic* was selected to do the scanning work.

Menuez has been working to make this collection more than just a coffee-table book, a struggle that a lot of photographers have faced. It's clear that the old model—the one that sustained him as a photojournalist in the 1980s and 1990s—is vanishing. Today, a work like "Fearless Genius" has to be more than the sum of its parts.

Notes Menuez, "What I did was document a lot of people that created these tools, and here I am trying to create, trying to take this record I have and make it a compelling educational or entertainment body of work. We're trying to make a new model—we have a core story and then a documentary around it, a book and an exhibit. We're combining video and sound around the stills, but all of these expressions of the core story get distributed to different channels and different revenue streams."

While Menuez makes it seem easy, it's something that most photographers today face—how to take their passions and make them financially viable in an era where digital has, to some degree, leveled the playing field.

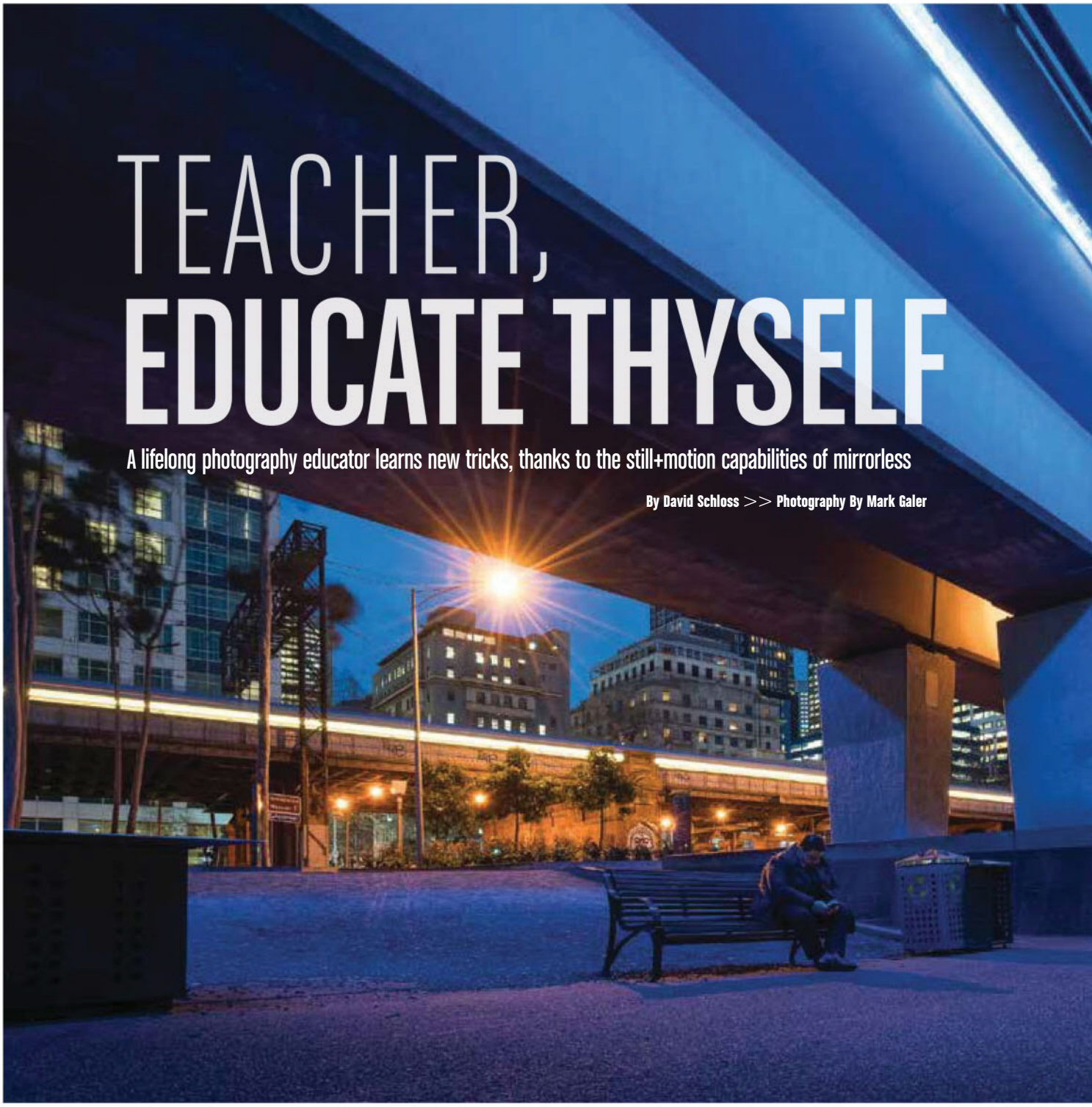
"In my case," Menuez explains, "my story is evergreen. We are celebrating the past; there are lessons to be learned there. This is a way of leveraging the future and the past. I want to have a dialogue. The average user has a role to play and a voice in the development of new technology."

Maybe that's the biggest lesson learned from the fearless geniuses he photographed. The Silicon Valley creatives who made the tools we all use today all had to focus on multiple tasks in an incredibly short time period to be competitive enough to survive. The victories often went to the teams that could most efficiently divide their tasks while staying focused on the goal.

It's as if the "Soul of a New Machine" of digital technology that was born in the mid- to late 1980s has the same powerful, yet incredibly fractured attention as did its creators, this almost ADD approach to completing any job at hand.

"The irony," Menuez explains, "is that the digital revolution destroyed the model that a [film] photographer depended on. You can't just shoot stills. You can't just do one thing anymore. You have to do everything." DPP

See more of Doug Menuez's photography at dougmenuez.com and menuez.com, and learn more about his Fearless Genius work at fearlessgenius.org. Doug is represented by Stockland Martel.



TEACHER, EDUCATE THYSELF

A lifelong photography educator learns new tricks, thanks to the still+motion capabilities of mirrorless

By David Schloss >> Photography By Mark Galer

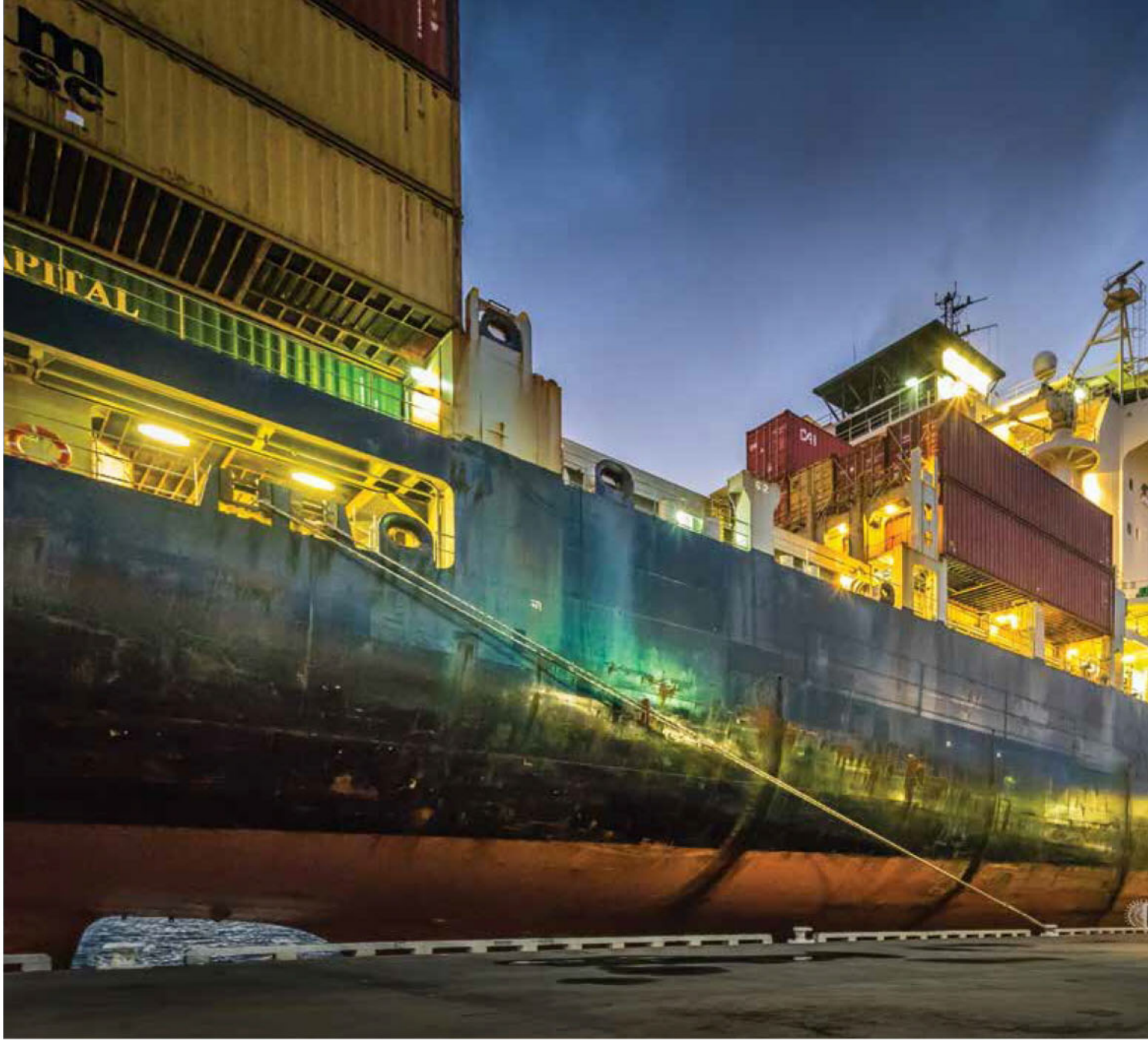
In the 1980s, Mark Galer probably couldn't imagine the photography world looking like it does today. A college student at Wolverhampton in the Midlands in the UK, Galer was immersed in the world of analog photography. He had originally planned on being an illustrator and a graphic designer, but found photography to be a better fit with his self-described "restless nature."

Mark Galer shoots with Sony's full-frame Alpha mirrorless cameras, including the new a7R II, which has allowed him to branch out into whole new avenues of photography. "The huge dynamic range and full-frame forgiveness that come with shooting with the a7 cameras is a liberating experience when capturing decisive moments and when working in locations with a huge subject contrast range."

Now Galer is an accomplished photographer, an educator and an Ambassador for both Adobe and Sony. A master of Photoshop and Lightroom, he has authored more than 30 books on photography and workflow, some of which are used as textbooks in digital photography classes around the world.

But, in 1980, he was a new graduate with a degree in photography and a need to develop his business. "I originally intended to be a graphic designer," he says, "but was drawn by the immediacy of the photographic medium. I graduated in 1980 and have called myself a photographer ever since."

Galer soon ran into the same issues that every other working photographer faces—the need to balance creativity and income. "Any perceived glamour wore off very quickly after graduation. The most difficult aspect of being a photographer is building a client base. There are very few jobs, and most work comes through networking and word of mouth."



THIS SPREAD: Galer's grounding in traditional photography gives his work a human, editorial vision, whether it's for a travel magazine or a corporate client. This comes from a decision early in his career to move away from lucrative, yet stifling studio shoots and to use photography to help see the world.

On The Road Again

By the late 1980s, Galer had started growing tired from commercial and studio work. "I have always had an interest in adventure travel," he notes. "I feel confined by the studio space, and I like to interact and explore the world. The happiest photographers tend to photograph what they know and love best."

That's why Galer set out in the late 1980s with two small Nikon FG bodies and three lenses—28mm and 50mm primes and a 70-200mm zoom—on a two-year documentary motorcycle trip. He visited more than a dozen countries, including Germany, Austria, Yugoslavia, Syria, Jordan, India and Thailand.

"I found that people all over the world genuinely welcomed the independent traveler and were more than happy to share whatever little they had—even if this was only to be photographed and tell me their story so this could be shared. We all really just need to be acknowledged—I am here; this is my story. The world became my studio, and I finally understood the importance of 'narrative'."

The equipment Galer uses today

would be barely recognizable in the 1980s, and he has begun to work in time-lapse photography and video. (You can download a 45-minute tutorial of "all the things I wish I had known about video before shooting it" on his website at markgaler.com/product/shooting-movies-with-a-dslr-or-sony-alpha-ilce-camera.

Galer shoots with Sony's full-frame Alpha mirrorless cameras today, including the new a7R II, and as an Ambassador, has access to some Sony technology before it's released to the public. For example, he used a pre-production a7R II (see our review in this issue, "Shooting With Sony's "Disruptive" a7R II") before just about anyone else. He's also pushing the boundaries of "photography" by working with time-lapse and high-speed photography.

"The craft of creating a high-speed movie clip or time-lapse sequence feels remarkably similar to me," says Galer. "It reminds me of the care, attention, patience and meticulous methodology that you had to approach the craft of using a 5x4 monorail camera and film prior to the advent of digital. Digital introduced a grab-and-run mentality for many photographers—high-speed photography and time-lapse photography reverses this trend.

"Much of the work I now shoot is on the Sony a7S," he explains of his setup. "The huge dynamic range and high ISO performance make it perfect for producing 4K time-lapse sequences."

Galer's setup and capabilities today would have made the 1980s Galer green with envy and have allowed him to branch out into whole new avenues of photography. "I am capturing sequences

ABOVE: Galer's fresh perspective on interior design elements helps clients show their properties in a new way.

of shots of urban or natural landscapes at dawn and dusk, which involves ramping [up] the exposure and white balance considerably over the 20- to 40-minute capture period. By monitoring the live histogram on the LCD screen during the capture sequence, I can ensure correct exposure by monitoring ISO, aperture or shutter speed.

"The jumps in exposure are then ramped in postproduction using LRTimelapse and Lightroom. As I have a generous megapixel count, I can then pan or zoom slowly if I want to create a more dynamic clip."

Unlike some commercial shooters who guard their techniques like the formula to Coca-Cola, Galer is happy to share his step-by-step methods. "I will often try to use shutter speeds of three or four seconds and a time-lapse interval of six seconds or longer. This will usually require the use of an ND filter to ensure the slow shutter can be maintained when the sun is up."

Keeping with his role as an educator, Galer has created a 40-minute tutorial of this workflow, available on his website at markgaler.com/product/dynamic-timelapse-tutorial to learn all the steps.

Galer has also moved into full cinema capture, also using the Sony a7S, thanks to its ability to record 4K video to an external device. Steeped in photography, Galer prefers to stay light when capturing motion.

"I try to avoid working with large rigs. I own an Atomos Ninja for pulling uncompressed HD footage from the a7S, and own a Sony XLR-K2M shotgun microphone, but I often find myself just using Sony's affordable wireless microphone system. My most recent purchase has been the Nebula 4000 Lite Gyroscope Gimbal Stabilizer, which will enable some more fluid shots that can be integrated into the footage I'm shooting."

Gimbals, external recorders, microphones—it's all a long way from riding a motorcycle down dusty roads with a bag full of Kodachrome 64 and some rolls of Ektachrome.

Says Galer, "The huge dynamic range and full-frame forgiveness that come with shooting with the a7 cameras is a liberating experience when capturing decisive moments and when working in locations with a huge subject contrast range. Shooting commercially viable images at ISO 6,400 and higher, instead of ISO 64, opens up a whole new world of photographic possibilities."

Leading The Revolution

After shaking off the dirt that comes with countless motorcycle miles, Galer decided to try his hand as an educator and soon was teaching at a college in London, where he stumbled across a new tool called Photoshop. Because he's a "technology junkie," he dove into

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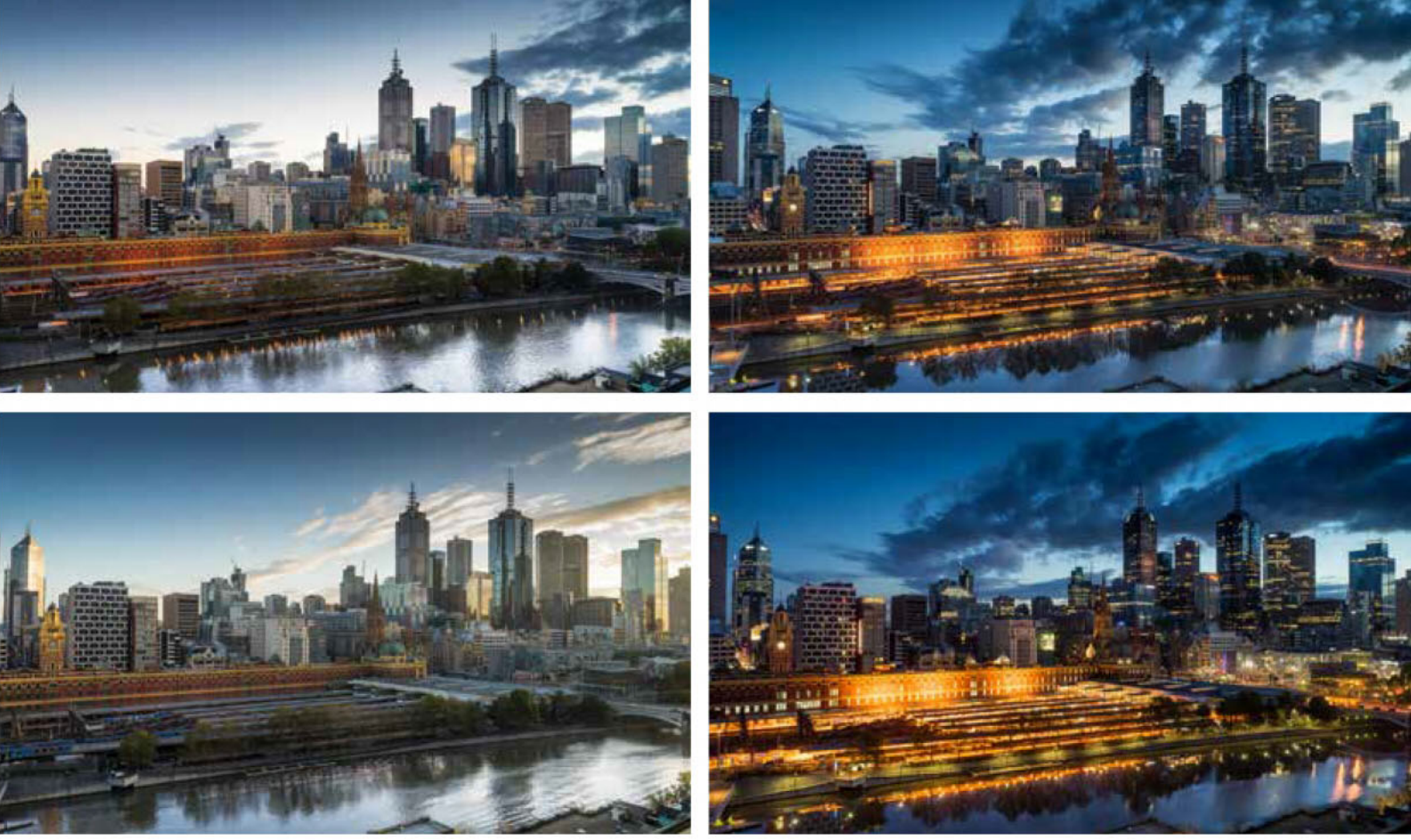

ABOVE: Of his work with time-lapse, Galer says it has helped him "reconnect with the photographic process."

the program. "I was lucky enough to embrace Photoshop 24 years ago while teaching at a college that was lucky enough to have the very first DSLR cameras—I embrace change."

Galer also embraces postprocessing, and spends a lot of his time working with images after a shoot, much as he did in the days of film, only with much more powerful tools.

"I'm not a photographer who believes everything should be done 'in-camera'," he notes. "Like Ansel Adams, I believe the negative, now the RAW file, is just the music score, and the work in post is our performance. My own postproduction skills were learned in the darkroom, and I have always considered that these skills are an essential aspect of the holistic process of creating an image."

Working with digital cameras since their inception, Galer knows that what you see is not always what you get. Says Galer, "I believe the camera cannot always faithfully record a scene—the camera merely interprets it. Careful editing of the RAW [file] is often required to restore the subject to how I first saw and experienced it. Image editing is capable of restoring the emotional reality, as well as altering reality."

To create his images, Galer likes to plan out what the final image should look like before he starts to shoot. "Most of the time, I have previsualized the outcome before I start editing an image." With an image look in mind, Galer adjusts images in a mix of Lightroom and Photoshop until he gets what he imagined from the start.

He's also not one to let a good image lay. "As technology gets better and better over the years, I find myself re-editing files to [achieve] superior results." It's not just images he revisits, he also heads back to "old haunts to capture them with more sophisticated cameras."

Working Today

Today, Galer finds himself trying to help educate Sony photographers (you can find his Sony-based group on Sony Alpha Talk on Facebook at facebook.com/groups/SonyAlphaTalk, where he profiles the new cameras and lenses he's using in his daily workflow). His personal website (markgaler.com) is also a treasure trove of resources, not only for the Sony shooter, but also for photographers, in general. On his site, Galer sells tutorials for image improvement and editing in Photoshop and Lightroom.

He also has been working on the EYE SEE project with Sony's Corporate Social Responsibility division and the World Photography Organisation, documenting the UNICEF program that teaches children to address social issues through photography.

Says Galer, "The revolution that is still taking place, with advanced digital hardware and software, is still serving to give individuals new and better tools that were previously unavailable."

Those tools are also making images that were previously unavailable, as is evidenced by his portfolio. DPP

To see more of Mark Galer's photography and learn about his tutorials and workshop opportunities, visit markgaler.com.

THIS PAGE: The Québécois rap group Loud Lary Ajust performs at the Impérial Bell, one of the indoor venues at the 2015 Québec City Summer Festival. **FAR RIGHT:** Mick Jagger of The Rolling Stones on stage at the festival's main venue.

Woodstock, Canadian Style

Still+motion meet to capture the rock 'n' roll essence of a live music event

Text & Photography By Mark Edward Harris

Shooting concerts is reminiscent of wildlife and sports photography. Long lenses, monopods, getting yourself into position for the decisive moment, and anticipating your subject's movements are all part of the game. To cover the city of Québec's Summer Festival or, as it's known in French, Le Festival d'été de Québec, I fill two Tamrac rolling backpacks to the brim, one with camera equipment and the other with a portable lighting kit. The annual 11-day music event, now in its 48th year, attracts over a million festivalgoers for concerts by international superstars and top new talent in one of North America's most beautiful cities.

ABOVE: The Doobie Brothers on the Bell Stage on the historic Plains of Abraham at the Québec City Summer Festival. TOP, RIGHT: Boston founding member Tom Scholz on stage. RIGHT: A member of the audience crowd-surfs at a Run the Jewels performance at the Impérial Bell.

Since I'm a one-man band, so to speak, I need to be as compact as possible, yet have all the tools needed to create both strong concert imagery and backstage studio-quality portraits. It's a balancing act between "if you don't have it you can't use it" and being so bogged down with equipment that I miss opportunities.

My "camera" bag contains two Nikon bodies, a 14-24mm *f*/2.8, a 24-70mm *f*/2.8, a 70-200mm *f*/2.8 and a fixed 300mm *f*/2.8. Inside my "lighting" bag are two 500-watt Profoto B1 heads, 5º and 20º grids, and two small umbrellas for the backstage portraits. Each Li-ion battery that powers the B1s can generate up to 220 full-power flashes. I use the grids specifically made for Profoto B1 heads since they're more compact than using grid adapters with regular grids. In the same bag I add two GoPros to record behind-the-scenes action. For grip equipment, I bring two compact Matthews reverse folding light stands that extend to 83.5 inches, two fillable sandbags, a small black fabric backdrop and a couple of A clamps. I also bring along a carbon-fiber monopod for use with the 300mm for concert shots and a carbon-fiber tripod for interior and low-light stock photography opportunities around the historic city of Québec.

With over 300 shows, 10 venues and 11 days of music, it's hard to choose what to focus on, but my goal is to capture some of the greatest rock 'n' rollers I grew up listening to, including The Doobie Brothers, Boston, Deep Purple, Megadeth and the festival's top draw, The Rolling Stones. Playing off MacArthur's famous farewell speech to Congress, which included, "Old soldiers never die, they just fade away," I've come up with the working title, "Old rockers never die, they just jam away." While pursuing this theme, I'll take time to check out a cross-section of today's top new artists. For the bands that allow the work to be distributed for editorial purposes, the resulting photographs will be distributed by Getty Images.

When it's showtime and the house lights go down and the stage lights go up,

my go-to base settings for capturing the performers are at least 1/250th, *f*/4 and ISO 800. My usual setup is a fixed 300mm *f*/2.8 on a Nikon D800E body and a 70-200mm *f*/2.8 on my Nikon D3X. I much prefer using lenses with non-variable *f*-stops. Even if I'm not shooting "wide open," having that fast an aperture allows enough light in for fast focus. For sports, I switch over to the Nikon D4 with its fast fps, but I don't really feel the need to shoot like a machine gunner covering music.

Most big-name musical acts allow for photographers to be "in the pit" for two or at most three songs, so you have to be quick and have an idea of which band members you want to focus on and have a basic understanding of their performance. For instance, are the guitarists or is the bass player left- or right-handed? Do they come forward to the edge of the stage or do they tend to stay back? If the latter is the case, then at a venue such as the main stage on the Plains of Abraham at the Québec City Summer Festival, it's important to establish a position farther back so you're not blocked by the high front edge of the stage. Also, you're not the only shooter in the pit, so you need to get to your key position first, then move around as needed. You might have a dozen other photographers doing the same thing. Fortunately, the photographers at high-end vetted events such as the Québec City Summer Festival usually know how to "do the dance," that is, work within a tight space and allow their camera-wielding brethren to get their shot without being blocked.

In addition to capturing the on-stage action, I was granted several small windows of time with some of the artists to do backstage portraits. The Profoto B1s have revolutionized my ability to get in and out of dressing rooms in a hurry with nicely lit portraits safely captured on my CF card.

The B1s have optional remote TTL units for Canon and Nikon. The 500W/s heads have a 9-stop power range, high-speed sync capabilities up to 1/8000th of a second, LED modeling lamps, and flash durations between 1/19,000th and 1/1,000th of a second, with between 0.1 and 1.9 second recycling times, depending on the power output. Part of my nightly post-

ABOVE: French singer and actor Patrick Bruel performs at the festival. FAR RIGHT: A portrait of Dweezil Zappa in his dressing room before his performance of Zappa Plays Zappa, in part a tribute to his late father Frank, on the festival's Loto-Québec Stage.

concert workflow is to recharge the B1 Lithium-ion batteries so everything will be at the ready for the next portrait opportunity. I also carry a spare battery.

Capturing video content is becoming more and more a part of editorial assignments. The online versions of print magazines often request behind-the-scenes video content. GoPro's new HERO+ LCD with its built-in monitor means I can hand the camera—often mounted on a GoPro 3-way arm or Tiffen's Steadicam CURVE—to a PR person or an assistant and get very usable results. The one bit of advice I give when handing over the camera to a non-videographer is to let the action move through the scene rather than wildly moving the camera around. The HERO+ LCD features 1080p60 and 720p60 video, 8-megapixel photos up to 5 frames per second, built-in WiFi and Bluetooth, and a touch display. It's also waterproof to 131 feet, though I have no plans to explore the depths of the Saint Lawrence River while in Québec this time around.

The GoPro cameras can be controlled remotely using the GoPro App and a smartphone. I find this particularly useful for framing up a shot on my iPhone using my other GoPro camera, a HERO4 Black Edition, especially when the camera is mounted on a GoPro accessory such as a head strap, chest mount or clamp setup.

I also can shoot video with my Nikon D800E and get excellent sound by plugging in a RØDE VideoMic Pro. This shotgun microphone has an integrated shock-mounting system that separates the VideoMic Pro capsule and electronics from its mount, in other words, isolating the sound-recording device from physical factors that can cause unwanted rumble and vibrations that would adversely effect the sound quality.

Another option is to use my Sony digital recorder and sync the sound when I do my post work in Adobe Premiere. For me, the most important non-sound recording accessory when using my Nikon D800E for video is a Hoodman loupe. This is especially important outdoors when the LCD screen is particularly difficult to see. In addition to acting as a magnifier and blocking out extraneous light, the loupe also is an extra point of contact and greatly assists in shot stabilization.

For camera work that requires follow focus and for an overall jump up in camera control, Redrock Micro's Captain Stubling is a compact unit with high production values. Redrock Micro's new ultraCage Scout (with integrated fingerwheel) looks like it will be an excellent alternative when working with a rig with no assistants. Because of its electronic focus system that's also wireless, it's more expensive than the Captain Stubling, but it's being billed as a great rig for both DSLR and mirrorless systems.

Since I'm a one-man band, so to speak, I need to be as compact as possible, yet have all the tools needed to create both strong concert imagery and backstage studio-quality portraits.

While covering the Québec City Summer Festival, I had a chance to work backstage with one of my favorite groups, The Doobie Brothers, actually one that I covered as a bass player in my high school band. They're not only fantastic musicians and songwriters, they're great guys. They played on the same night as one of my other favorite bands growing up, Boston, led by founding member Tom Scholz with their new lead singer Tommy DeCarlo. DeCarlo has an amazing backstory, similar to that of Journey's lead singer Arnel Pineda, who was discovered in the Philippines through YouTube videos. Boston's present lead singer recorded covers of their songs and posted them on MySpace, including a tribute song to Brad Delp after the band's former lead singer committed suicide in 2007. It got to the ears of Boston leadman Scholz, who asked DeCarlo to be one of the singers at the Brad Delp Tribute Concert in Boston. This evolved into DeCarlo becoming the band's lead singer. DeCarlo left his job at Home Depot to become a rock 'n' roll star about a month before the 2008 tour and has never looked back.

Boston and The Doobie Brothers performed at the festival's main venue on the historic Plains of Abraham, where the British defeated the French in 1759 in a battle that brought major parts of what's now Canada into the British realm. While the battle is long over, the British invasion on these same grounds isn't. This one, however, is led by Mick Jagger and The Rolling Stones, who this time are greeted by the Québécois with open arms. Any resistance to Jagger's energy would be futile anyway. The septuagenarian's incredible high-energy performance necessitated my bumping up my shutter speed to 1/500th of a second and, therefore, out of necessity, my ISO to 1600 since I didn't want to open up my lenses to *f*/2.8. Even though the sensor of my Nikon 800E can easily handle the ISO, producing little digital noise, I'm old school in terms of avoiding ISOs over 800 whenever possible.

Since I wear a number of photographic hats, including that of a travel photographer, I took the opportunity in Québec to shoot some stock photography and illustrate two travel stories on the city's fascinating history. For this work, my carbon-fiber tripod with a ballhead, a cable release (for shooting with the mirror locked up to avoid any vibration) and 14-24mm lens were called into service.

While next year's Québec City Summer Festival lineup won't be released until later this year, one thing is for sure, there will be a whole new set of photographic opportunities. DPP

See more of Mark Edward Harris' work at www.MarkEdwardHarris.com and follow him on Instagram @MarkEdwardHarrisPhoto

Shooting Sony's With "Disruptive" a7R II

THE LATEST CAMERA IN SONY'S MIRRORLESS LINEUP IS POSITIONED TO TAKE DOWN THE KINGS OF THE DSLR WORLD. WE PUT IT THROUGH ITS PACES TO SEE IF IT LIVES UP TO THE HYPE.

Text & Photography By David Schloss

Sony's new a7R II is a shot across the bow of Canon and Nikon. Spend anytime with Sony's engineers, and you'll hear them describe their new system with the term "disruptive." Based around a new Sony-designed sensor, the a7R II is a clear sign that Sony has their competitors in their sights and is gunning for their market share. The spec sheet for the a7R II reads like a brochure for "why mirrorless is the future" and Sony is quick to point out that many of the key features in the camera—electronic first-curtain shutter, eye-detection AF and on-chip phase detection, among them—aren't possible with DSLRs.

The questions that arise, then, are "Does it deliver on Sony's promises?" and "Does it unseat the DSLR?" (See "The DSLR Is Still King" in this issue.)

The answers are "yes", and "maybe"—depending on what type of photography you do.

Feature-Laden

The a7R II is the fifth camera in the Sony a7 series, and is the second of the Sony cameras with the second-generation "II" moniker. The a7 II, which was released just nine months ago, included a lot of the technological innovations that have made their way to the a7R II. Like the a7 II, the a7R II has in-camera five-axis stabilization, a wide on-chip phase-detection AF system and more, but the a7R II ups the ante considerably with several new and impressive features.

The most interesting development in the a7R II is the new 42-megapixel, full-frame sensor.

As a general rule in digital photography, the more pixels a sensor has (all else being equal), the worse the camera performs in low light. Sony wanted to change this, so they created a new sensor

for the a7R II with a technology called Backside Illumination (BSI) to dramatically increase the sensitivity.

The result is a 42-megapixel camera with an ISO rating up to 25600, expandable up to 102400, while the competing 50-megapixel Canon EOS 5DS has a top ISO of 6400 and the Nikon D810, 12800. That high ISO rating enables photographers who would previously have had to go to a low-megapixel camera (like the a7S) to get good ISO performance to instead capture images with huge resolution.

This full-frame BSI sensor is only in Sony's a7R II, meaning that the previously released a7 II doesn't use the tech. It still has a wide ISO range (thanks to the lower-megapixel resolution), but consequently doesn't have the advantages of the BSI technology—shooters will need to wait for a third-generation system for the new chip design.

The a7R II also improves upon the autofocus in the a7 II, adding an AF-A mode that automatically selects from AF-S or AF-C, depending on the scene, and a lock-on AF mode that's incredibly useful. In this mode, photographers can select a subject and then pan the camera, and the focus point will stay locked on the original subject.

The a7R II also has eye-detection focus (while the a7 II has face-detect), which I found to be incredibly accurate—more accurate than their (or anyone's) face-detection system and more accurate than I've ever seen on a DSLR. This is another case where technology has begun to supersede the performance of a photographer.

The heart of the AF engine is an on-chip phase-detection system with 45% coverage of the sensor. This system is fast enough that it allows lenses from Canon (when attached with an adapter) to perform at a speed comparable to native Sony glass.

The a7R II also introduces an electronic first-curtain shutter, which can be activated at anytime and enables completely silent operation. For wedding photographers and photojournalists, this feature could be a lifesaver, as it's possible to capture images without any sound at all.

4K And More

The a7R II also leaps ahead of the video-centric a7S (and ahead of all other cameras currently on the market) with its 4K video capture. Other cameras that are capable of capturing 4K use a technique called "pixel-binning" in order to save time processing the massive data from a sensor. Pixel-binning simply means that the camera doesn't read each pixel of data, but skips some pixels and interpolates the data from the pixels the camera does read.

The Sony a7R II instead reads every single pixel for its 4K video, which can result in superior video image quality. Unlike the a7S, which requires an external recorder for 4K video capture, the Sony a7R II can write to SD cards.

This instantly makes the Sony a7R II one of the most desirable cameras in 4K video capture.

In The Field

For the shooter familiar with the performance of the original a7, the a7R II is a completely different experience. While the a7 wasn't slow, per se, it never performed as well as even a mid-level SLR in terms of AF speed. It was a great camera for the photographer doing portrait work, but you'd never try to capture adventure sports with it.

The a7R II is (like the speedier a7 II) a whole new creature. It focuses instantly, easily as fast as the top DSLRs and, in some situations, it focuses more quickly and more accurately. Because the sensor is always active in a mirrorless camera in order to provide an image in the LCD or EVF, the phase-detection system can do things that DSLR systems cannot, such as real-time eye-detection focus.

One other advantage to having the

phase-detection sensor on the chip is that the sensor is able to make use of all available light for focusing. With a DSLR, light is reflected to a separate sensor (via the reflex mirror) and that chip usually operates stopped down to *f*/4 or *f*/5.6 (depending on the camera). With an on-chip mirrorless system like that in the a7R II, the sensor can operate at the maximum aperture, which gives it a low-light focusing advantage.

These advantages are something that Sony takes pains to mention; it's the secret sauce in the mirrorless world and it's key to Sony's plans to chip away at the competitors. The company has looked at the limitations of the DSLR world and is innovating in order to make mirrorless cameras not on par with them, but in a class above.

In The World

Of course, the success of Sony's world-dominance plans depends on the operation of the system in real professional applications. While there are some pretty compelling advantages to using a mirrorless system, there are still some limitations. (We cover these more in depth in "The DSLR Is Still King.")

One notable area where the a7R II falls short, as do all the a7 cameras, is the speed with which the camera clears out the buffer and returns to operation. Because of the small size of the a7-series body, there's not as much room inside for things like processors and buffer RAM as in cameras like a Canon EOS-1D X or Nikon D4S, and the internal mechanics are smaller, as well.

As a result, the a7R II, like the a7 cameras before it, isn't as fast as a top-end DSLR—you're maxed out at 5 fps vs. the 11 fps of a pro DSLR, and the buffer fills up more quickly and takes longer to clear than a pro DSLR. Even after a few shots, it's necessary to wait a few seconds for the files to write to the card before it's possible to review images or change settings.

The Sony a7 system also uses a relatively small battery, which has a shot count of just a few hundred images, where a pro-level DSLR can capture

Zeiss Batis Lenses Arrive

Designed to work in tandem with the Sony a7 series, the new Batis 25/2 and 85/1.8 optics deliver sharp image quality and vivid color

Sony and Carl Zeiss have long had a strategic partnership—you'll find the blue-and-white Zeiss badge on products ranging from the company's compact cameras to Sony-designed lenses for the company's flagship Alpha series. With the release of their first two Batis lenses, which are only available for the Sony E-mount (such as the a7R II), the German manufacturer has started to bridge the gap between the Sony lenses with Zeiss optics and their own higher-priced (and usually manual) lenses.

The new **Zeiss Batis lenses** were designed specifically to work in concert with the Sony a7 series and provide full autofocus and Zeiss' legendary image quality, while at the same time shedding some of the weight that Zeiss lenses are known for. They also have helped Sony tackle one of the bigger obstacles to adoption of their full-frame mirrorless cameras: the lack of available lenses. That's great news for the Sony shooter, as the a7 system doesn't have nearly the range of offerings as do Canon and Nikon. Having high-quality, third-party lenses available for the Sony E-mount helps legitimize the platform.

Zeiss also decided to eschew convention and has put a first-of-its-kind OLED display on the lens barrel to provide distance information while working in manual-focus modes. It's one of the most talked about features of the new lens, and is an interesting solution to a problem caused by today's focusing systems.

Fly By Wire

With manual-focus lenses like the Zeiss Otus, or classic film-era lenses, turning the focus dial mechanically changes the optics inside the lens. There's a direct correlation in these systems between the amount the dial is turned and the amount the focus is changed.

By contrast, the Zeiss Batis is a "fly-by-wire" system that translates the movement of the external dial to commands for the internal focusing motor. There's no direct connection between the dial and the optics; instead, a processor in the lens translates the movement of the dial into movement of a focusing servo.

That means that there's no direct way to show focus distance on fly-by-wire lenses, since the dial doesn't correlate to anything physical in the lens.

To provide more information during manual shooting, Zeiss has included a small, bright Organic LED (OLED) display into the barrel itself. This OLED can also be turned off by the user, preventing a glowing white screen from interfering with a shoot.

In practice, the OLED seems to be neither a benefit nor a detraction. When manually focusing, I'm rarely checking the barrel indicator anyway, so I don't notice the OLED. It's an interesting way to provide more manual controls, but we'll have to wait to see how well the OLED stands up in heavy use.

Focus Points

That the company didn't first release a "standard" prime in the 35mm or 50mm lengths is telling. With the first offerings at

thousands of images before needing to swap out the battery.

Those shortcomings aside, the Sony a7R II is a remarkable camera, and it produces remarkable images, especially when paired with glass like the Zeiss Batis lenses (see the sidebar). Sony designed all of their lenses to perform well with high-resolution sensors, and the a7R II brings out the best in a good lens.

In my tests, the Sony a7R II exceeded expectations. While the Sony a7 and a7R I've shot with felt, at times, pokey, the Sony a7R II always felt as if it was operating at light speed. Focusing is lightning-fast and accurate. Portraits—especially those when eye-detection focus is active—are sharp, and it's much faster to compose a shot with a subject knowing that the camera can pick out and track their eye.

Color fidelity and reproduction are likewise excellent. Combine the a7R II with high-resolution lenses, and the result is an incredibly sharp, accurate and detailed image.

High ISO

With the new backside-illuminated sensor and the claimed ISO performance, naturally I had to take the camera out in the dark.

For handheld streetscapes late at night, I increased ISO, capturing the buildings and streets between ISO 16000 and 32000, and found that the amount of noise at this range is comparable to many

25mm and 85mm, there's a wide gap between focal lengths, one that suggests more Batis lenses are coming.

The **Zeiss Batis 25/2** has a street price of $1,299, and the **Zeiss Batis 85/1.8** has a price of $1,300, which makes the lenses just a tad lower in price than similar Sony-Zeiss lenses.

Focus Speed

When coupled with the Sony a7R II, the Batis 25mm focuses as fast as any lens I've tested, and better than many of the lenses in the co-branded Sony-Zeiss partnership.

The 85/1.8 is slower to focus—there's just more glass being moved—but faster than the Sony 55/1.4 and much faster than the Sony 90mm macro.

Sharpness And IQ

When used properly, the Batis lenses provide incredible sharpness and vivid color rendition, and create images with very little chromatic aberration or artifacts. The best results with the Batis lenses come when shooting studio work or portraits, places where the sharpness wide open really is helpful.

I combined the Batis 25/2 and Batis 85/1.8 with the Sony a7R II and the results are pretty stunning. Zooming into the images reveals a level of detail not possible on other lenses, short of the incredibly expensive Zeiss Otus 85/1.4. The Otus, with its nearly $5,000 price tag, is vastly more lens than most photographers need on a regular basis, but it's a good benchmark for Zeiss' top-end imaging.

The Batis lenses aren't quite as sharp as the Otus, nor do they deliver the creamy bokeh of the Otus, but they do provide autofocus (the Otus is manual), they weigh significantly less, and they cost a fraction of the Otus.

Extension Of The Platform

As far as third-party lenses go, having Zeiss creating glass for your platform is a big deal. The company has an insight into Sony's future plans, thanks to their existing partnership, and wouldn't build a new product class if they didn't feel the Sony system has legs.

It would be great to have more focal-length options in the Batis series, and I'm sure those will come. A 35mm and 50mm lens would be fantastic, but as Sony already has high-end lenses in those focal lengths, it makes sense that Zeiss started with the 25mm and 85mm primes.

In the meantime, the Zeiss Batis 25/2 and 85/1.8 are tremendous lenses, and they're good enough to make users of other platforms jealous. With a reasonable price (relative to other Zeiss glass), they're affordable enough for any pro or enthusiast to add them to their inventory and be confident that the money is well spent. It's hard to get a better-looking image at this price, regardless of camera system, and there's little reason why they shouldn't be in the arsenal of any Sony shooter. **zeiss.com/camera-lenses**

—David Schloss

other systems at ISO 1600. There's very little grain, very little to indicate that the street corner image was shot at an ISO that—if available on most other profession cameras—would produce an image that was for all purposes useless in a commercial application. The performance is an order of magnitude better than the Canon EOS 5DS and Nikon D8100, the closest competitors for this resolution. The low-light performance is also vastly better than all of Sony's other a7 cameras, aside from the ultra-high-sensitivity a7S. The a7S achieves its high sensitivity by using a low-resolution sensor, while the a7R II has both sensitivity and resolution.

This night landscape of Portland was also shot at ISO 16000, handheld at 1/125th of a second at *f*/2.0 and gave an image comparable to many I've seen at ISO 2000, noise-wise. That's a 3-stop improvement in light performance, which is incredible.

In short, the a7R II lives up to its claims for ISO performance, quickly becoming the best-in-class at the resolution, and better than many other cameras at lower resolutions.

Sports And Events

The a7R II isn't marketed at sports photographers, due to the high resolution of the sensor and the speed with which the camera processes images. At 42 megapixels and 5 fps, this camera isn't designed to keep up with a pro DSLR in frame rate, and the experience for a *Sports Illustrated* shooter trying to capture something as fast as the X Games would be frustrating, mostly because of the time it takes the camera to process images before shots can be reviewed or before the menu can be accessed.

That said, there are some very compelling applications for sports photographers here, especially with the low-light performance. While the a7S has fantastic high ISO quality, it doesn't have the five-axis stabilization of the a7R II, nor does it have the ability to record 4K internally. That makes the a7R II the must-have camera for the sports shooter doing a mix of video and stills.

During a press event sponsored by Sony, I had the opportunity to test the a7R II as a sports camera, thanks to several high-speed subjects they had on hand. With mixed martial arts fighters, breakdancers and acrobats as subjects, I switched the camera into high-speed frame rate and tested the various focus modes.

All of the focus tracking kept up with the speed of the action and tracked the subjects at least as well as the DSLRs do. There was more lag time between each shot than with an optical DSLR, meaning that the a7R II blacked out momentarily between frames as the shutter triggered, but the AF system continued to focus and perform.

The big drawback for sports—or even for wedding, news and event photography—is the time between when a batch of images are captured and when they can be played back or settings can be changed. Waiting several seconds to review an image after just a few RAW files are captured is a huge issue for photographers who are used to checking their framing and lighting in-camera.

Conclusion

The a7R II isn't a perfect camera, but it's the best camera that Sony has ever made, it's the best mirrorless camera available, and it's the first camera that truly challenges the DSLRs.

That Sony managed to get so much performance out of a sensor this large and still maintain image quality that's on par with the best DSLRs is telling. Their goal is clearly to someday make a mirrorless camera that beats the DSLR in every category. The a7R II isn't that camera, but it's certainly the closest camera the industry has ever seen. DPP

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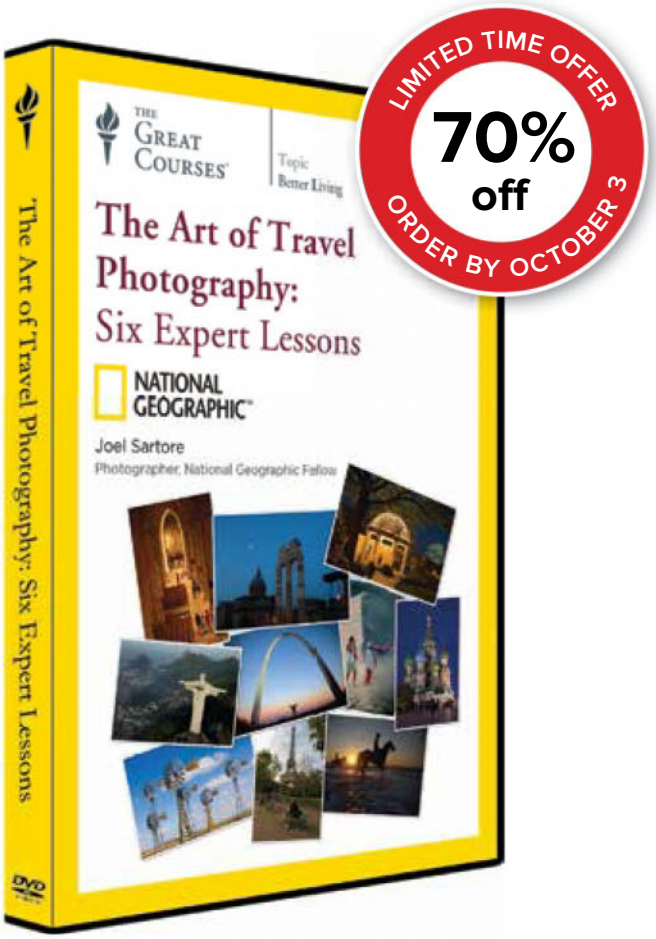

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ABOUT YOUR PROFESSOR

Joel Sartore is a professional photographer and a regular contributor to National Geographic magazine. His assignments have taken him to some of the world's most beautiful and challenging environments and have brought him face to face with a diversity of wildlife in all 50 U. S. states and all seven continents. He was recently named a National Geographic Fellow for his work on "The Photo Ark," a multiyear project to document the world's biodiversity in studio portraits. His photograph of a lion in a tree was voted the best picture by National Geographic magazine in 2011.

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Nikon D4S

The DSLR Is Still King

While mirrorless cameras offer advantages such as a small form factor and versatility, the optical viewfinders, high-speed frame rates and powerful processors of top-end DSLRs keep them on the throne

Text & Photography By David Schloss

Mirrorless camera manufacturers like Fujifilm, Olympus, Panasonic and Sony are in an arms' race with the more traditional DSLR manufacturers—mainly, Canon and Nikon—a race that's fueling an incredible rush of technological development and innovative product design. There's a buzz and an excitement in the camera industry that has been absent in the market since the early days of the move from film to digital, when the companies all rushed to bring new features and functionality to customers.

Due, in part, to customer demand for mirrorless bodies, which are generally smaller, lighter and less expensive than their DSLR counterparts, there has been a huge uptick in demand for mirrorless cameras, and yet that demand hasn't translated into a move by the main DSLR manufacturers to move into the space. This is largely due to the difficultly of transitioning an existing customer base over to a new platform—a mirrorless body would require a Canon or Nikon shooter to purchase new lenses for the new system—and, in part, to new engineering requirements for the new technology, which would take resources away from DSLR development.

For the DSLR manufacturers, there isn't yet a reason to panic. The Sony a7R II, which is the current pinnacle of mirrorless camera development (see our review in this issue, "Shooting With Sony's "Disruptive" a7R II"), is notable in that it has *just* caught up with pro-level DSLRs in some areas of operation, lags behind in many others and only just *potentially* surpassed the DSLR in a few areas. Even the vaunted a7R II falls short of pro-level DSLRs (and some advanced enthusiast models) in some key ways, and most of the rest of the

Canon EOS-1D X

field of mirrorless cameras lags behind that system in terms of performance and power because they're aimed at the lower end of the market. That gives the major DSLR makers time to develop and perfect something mirrorless of their own before the competition overtakes them, at least from a performance standpoint.

What DSLR cameras do well, they do

very well, and that's partially the result of their form factor. The powerful processors, motors and circuitry required to churn out prize-winning images at 15 fps don't yet fit inside a mirrorless body, and there's a certain size expectation with mirrorless systems—after all, it's the compact form that's the competitive advantage of the mirrorless camera. If the mirrorless body has to increase to the size of a DSLR to fully compete, then what's the point?

Room For Improvement

Look at the professional DSLR, and the most striking feature is its size. Anyone who has taken a pro DSLR to a birthday party or a kid's soccer game knows the stares and odd looks the camera generates because of its enormity. But with the pro camera, the form follows the function, and the function of a pro DSLR is to operate at incredible speed under demanding conditions.

The mirror box—the "reflex" in single lens reflex—is one of the largest components of the body of an SLR. The mirror takes up so much room because it needs to be large enough to cover the full size of the sensor and to bounce light from the lens up to the viewfinder. It also needs to house the mechanism necessary to make sure this works at 1/8000th of a second at up to 15 times a second.

But the mirror box isn't the largest part of the camera, just the part that the body is designed around. The frame of a DSLR is large because it's chockfull of circuit boards, electronics, batteries and connectors. It's a minor miracle of engineering that everything fits inside, and the companies use every millimeter of the housing to maximize the performance.

Optics

The most notable feature of a DSLR camera is the optical viewfinder, as it's the through-the-lens focusing and composing prowess of the SLR that made it the most popular camera system in the world. The mirror of the DSLR bounces light up into an optical viewfinder and allows the photographer to see through the lens. A mirrorless system uses an electronic viewfinder (EVF) instead of an optical one, and while EVFs have some great features, many photographers swear by the quality of the image in an optical viewfinder. It's the difference between looking at yourself in a mirror and looking at yourself on TV—it doesn't matter how powerful the TV is, it's not going to be the same as a mirror.

This becomes more important when working in low light. EVFs traditionally get grainy and pixelated under low-lighting conditions while optical viewfinders get dark, but no darker than the eye would see in the same conditions, give or take the amount of light passing through the lens.

Certainly, EVFs have some powerful advantages, but if you want the clarity

of an optical viewfinder, by definition, you're going to shoot with a DSLR.

Speed Demon

Work with mirrorless cameras long enough, and you're sure to hear someone say, "They're not designed for sports photography." This complaint is usually leveled at the focus speed and capture rate of the systems (as well as the processing time, which I'll discuss), and generally speaks the truth, though barriers are crumbling here faster than in other areas. The core of this argument currently revolves around *full-frame mirrorless systems* like the Sony a7R II, which has a top speed of 5 fps, while the Canon EOS-1D X has a frame rate of 14 fps in Super High Speed Mode.

In the APS-C arena, though, things start to get a bit more confusing. The Canon EOS 7D Mark II DSLR has a top speed of 10 fps, while the mirrorless Sony a6000 has a frame rate of 11 fps, and the mirrorless Samsung NX1 has a frame rate of 15 fps, faster than even the fastest pro DSLR.

That said, it's unlikely we'll see a full-frame mirrorless system come close to the frame rate of the Canon EOS-1D X or Nikon D4S until Sony releases a future generation of the Alpha system, one designed to toe up against the fastest pro systems—and, by then, who knows what Canon and Nikon will be able to do with the speed of their mirrors.

Another speed consideration is focus speed, and here, too, the DSLR is still king, if only for the time being. Pro DSLR systems have incredibly accurate phase-detection AF systems that currently are only challenged at all by the Sony a7R II and Samsung NX1. The rest of the phase-detection-based mirrorless camera market utilizes phase-detect systems that are much less robust than pro DSLRs, and many rely instead on contrast-detection autofocus systems, which fall far behind phase-detect systems in terms of focusing speed and the ability to track moving targets.

The powerful phase-detect focus systems in DSLRs is separate from the sensor, while in a mirrorless system, it's integrated into the sensor itself. The mirror in the SLR flips to channel the incoming light to a dedicated focus sensor, which usually has its own processor. This powerful arrangement allows the camera to perform accurate, high-speed focus that sports and other photographers depend upon. Splitting the processing and focus sensor actually allows these systems to function more rapidly than when the imaging and focus points are combined on the sensor—at least today. As technology improves, these gaps will close, but today the top-end DSLR has more focus points with more coverage and more rapid processing than the mirrorless system.

Processors And Buffers

Pro-level DSLRs have bigger and more powerful processors, so these cameras can capture images at astounding rates because the processors are used to taking the data from the sensors, converting them into a JPEG file or a RAW file and then pushing them to the camera's buffers. The more powerful the processors, the faster the camera can capture images. The bigger the buffers (onboard memory), the more images that can be captured before the camera has nowhere to put them.

Mirrorless systems have less room, in general, which means smaller and/or fewer processors and smaller buffers. While mirrorless systems will get more powerful processors and buffers will be able to hold more in less space, these advantages apply to DSLRs, as well.

Power To The People

Professional DSLRs also have massive batteries, which not only drive the

more energy-hungry mirrors the systems are built around, but also provide all-day energy that a mirrorless system currently can't match. The Nikon D4S battery captures more than 3,000 shots on a charge, while the Sony a7 system captures around 300. The most power-friendly mirrorless systems only shoot around 500 frames before they conk out. This isn't a minuscule difference either—a wedding photographer can burn through 300 images before the ceremony even starts, and a sports photographer can capture that many images in the first few innings.

The problem with power is compounded when photographers capture a mix of stills and video, as video capture is more processor-intensive and runs down the battery much faster than still photography. The result is a lightweight camera system that requires a handful or more of batteries, while the DSLR can complete a whole shoot with just one or two batteries.

Playing The Slots

A chief complaint about the Sony a7 series, and about mirrorless cameras, in general, is that they only have a single media slot. Professionals rely on dual media slots to keep shooting when one card fills up, in a situation where a card fails, or to capture RAW files on one card and JPEGs on another. The extra room afforded by the DSLR body allows the cameras to have multiple card slots, which gives them a tremendous advantage in professional workflows.

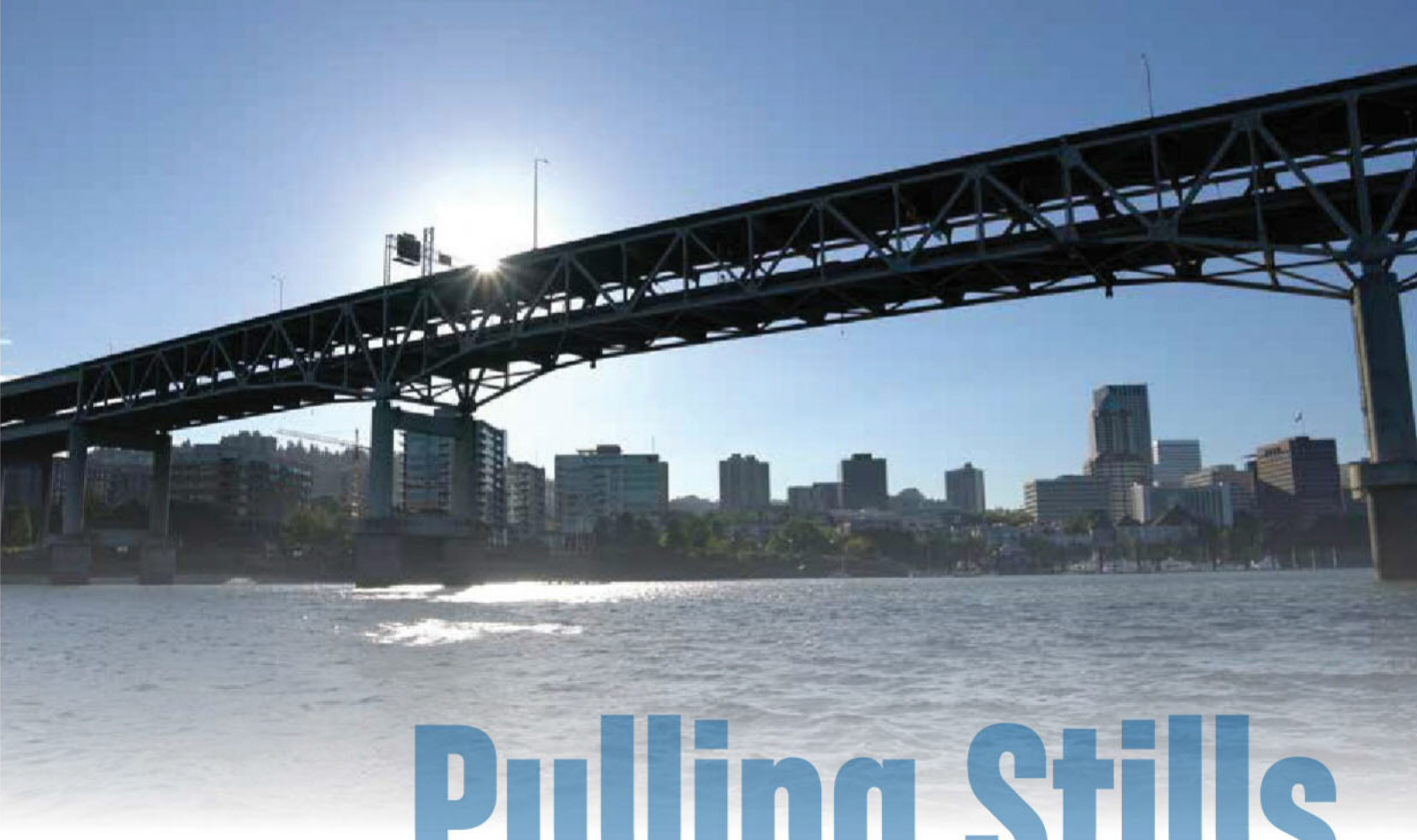
Weatherproof

Professional DSLRs are sealed against the elements, protecting the camera from rain, dust, sand, dirt and other things that can get inside and destroy the delicate components and electronics. While a number of mirrorless cameras have a degree of resistance to moisture and contaminants, they're not nearly as weather-sealed as the pro DSLR cameras. True weather sealing requires thick gaskets and couplings that increase the size of the housing—and small size is something that mirrorless systems strive to keep at all costs. For a photographer capturing a kayaker making a first descent on a waterfall or even a fashion shooter grabbing a clothing catalog shoot of a family frolicking in the surf, true waterproofing is vital.

The Future Of DSLRs

The current position of DSLRs relative to mirrorless cameras will change, and probably more quickly than we can imagine. (See "Misinformation" in this issue.) As both mirrorless and DSLR cameras evolve, we'll see some features gain parity while some become more platform-defining. Only time will tell if there will even *be* DSLR cameras in the future, but for now, for many professionals, the top-end DSLR cameras have features that mirrorless cameras can't touch. At least not today. DPP

You can reach David Schloss on Twitter or Instagram @davidjschloss



Pulling Stills FROM Motion

Thanks to the resolution of 4K video, photographers can shoot motion and pull out client-worthy still images

By David Schloss

The moving images we see when we watch videos and movies are really just an optical illusion, a trick played by our brain when it's shown a certain number of images in a short enough time. At about 30 images per second, the motion caused by this stream of still images becomes indistinguishable from the motion we perceive from actual moving objects. That's why photography and cinematography have always been connected—the tools needed to create moving images are directly descended from still imaging tools, just larger and more powerful. The two technologies have always developed in tandem.

Take the "35mm" format, for example, which became a standard because it's the same size film as used in traditional movie cameras. In the early days of cinema, you could use a 35mm camera and lens to test the lighting and composition of a scene before capturing it with more expensive film stock.

Through most of the history of imaging, still cameras were still cameras and motion cameras were motion cameras—that has begun to change. Today's powerful digital video formats have unleashed a new workflow.

With 4K video, thanks to the large amount of data captured with each frame, it's now possible to shoot video and extract usable files from single frames. 4K captures around 30 8MB images per second, and the resulting images are good enough to run in print magazines. That means that a photographer can take a 4K camera and shoot video, and then later select individual frames to deliver to a client.

There are some limitations to the 4K-to-still workflow, including a slightly cumbersome series of steps needed to extract individual frames, but the process opens up some amazing possibilities.

Sports photography immediately comes to mind for video-to-still work, thanks to the fast motion of the typical subject. Capture video of a snowboarder in a half-pipe and pick out the best frame from a collection of not 5 or 10 frames per second, but instead from a continuous stream of 30 images each second.

Other types of subjects can benefit from 4K capture, as well. A common dilemma for wedding photographers is the need to capture intimate gestures and looks from a couple during their ceremony, without a constant barrage of shutter clicks. A wedding photographer could easily set a camera on a tripod with a long lens and capture the entire ceremony, cherry-picking the best frames in postproduction.

It's also not far until 5K video workflows arrive—systems like those from RED already capture video in 6K in order to edit down to 4K in postproduction video workflows. The point at which video moves to 5K is the point at which still photography and videography become indistinguishable.

Some Restrictions May Apply

While a camera capturing 4K video might have a high-megapixel sensor, 4K video doesn't use all of the data as it's cropped from the sensor and downsampled to the 4K standard size. Each frame from 4K is an 8.8-megapixel still and is captured at a 17:9 ratio.

The stills grabbed from 4K video will be wider and narrower than a full-frame still. This often will result in the need to crop an image that was captured in 4K when standard still images are also part of the mix, in order to maintain aspect ratios. Cropping the 4K frame grab naturally results in an even lower final pixel count. There's also reduced dynamic range when shooting video, something that has to be factored in during a shoot.

4K video requires a huge amount of storage space. A minute of 4K video takes about 1 GB of storage space, and high-speed CompactFlash and SD cards are required to keep the camera from filling up the buffer and prematurely ending the video capture. This renders a lot of the CF cards photographers have in their bags useless for 4K video, meaning another outlay for storage.

This still was pulled from a cooking video, and could easily be used for a cookbook or on social media.

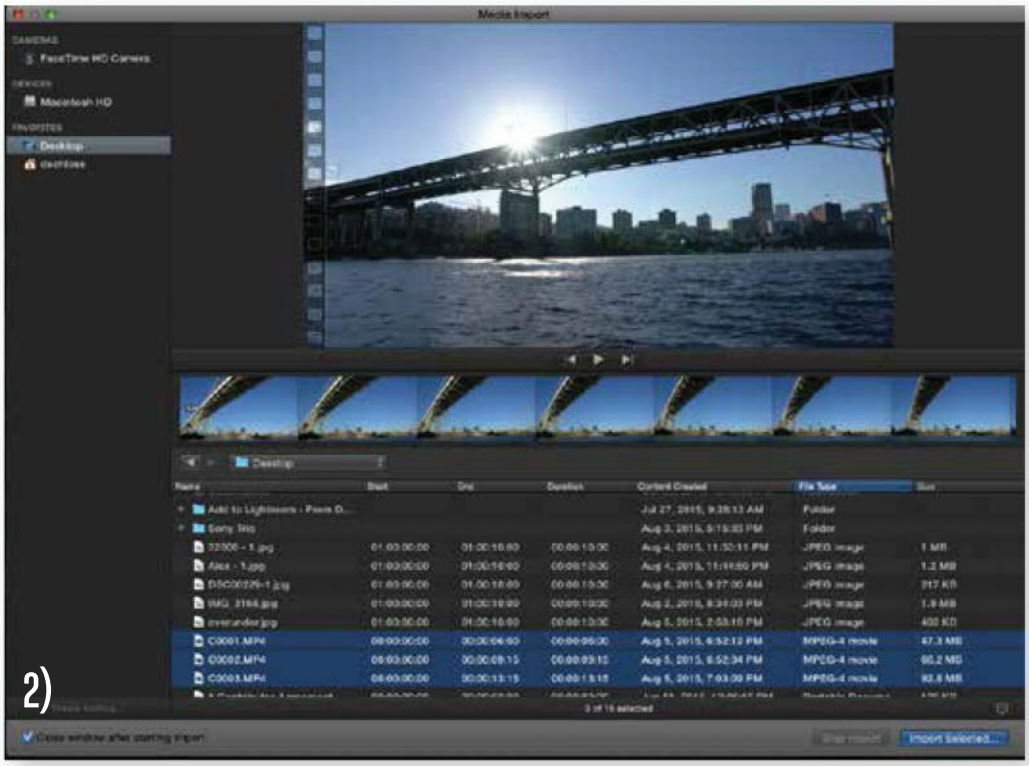
Photographers will also need additional software to pull images from 4K video—something like Apple's Final Cut Pro X or Adobe's Premiere Pro. You can't just import 4K video into Lightroom and pick a frame (yet), but you can import it into Final Cut Pro X or Premiere Pro, pick a frame and export just that single, 8-megapixel image.

It's not necessary to have a 4K display to work with 4K video, since the standard automatically scales down to be able to display correctly on HD displays, so there's no new investment in hardware needed.

Grabbing A Photo

While the process for exporting stills from Premiere Pro and Final Cut Pro X are slightly different, the idea is the same. We'll assume you're working with Final Cut Pro X, in this example, but the steps are similar in Premiere Pro.

Final Cut Pro X requires a small bit of configuration to be able to export a frame. From the Preferences menu (press "Command+Comma"), select the Destinations tab and then click Add Destination (Fig. 1). Click on the Save Current Frame icon and select a format. TIFF and Photoshop (PSD)



It's also not far until 5K video workflows arrive–systems like those from RED already capture video in 6K in order to edit down to 4K in postproduction video workflows. The point at which video moves to 5K is the point at which still photography and videography become indistinguishable.

are the highest-resolution options, but PNG and JPEG are also available.

After capturing a 4K video, import it into the application (Fig. 2). You'll be prompted to add them to a new event or an existing event. If you're just grabbing stills, it doesn't matter what event the videos are added to, but if you're working on a video project, it's a good idea to give it an appropriate name.

It's not necessary to turn on any of the special import features, like color balancing or audio analysis, if you're importing simply to frame grab.

Video clips are added on the left side of the standard Final Cut Pro X interface, and can be left here to grab frames (Fig. 3). It's not necessary to create a new event or to add videos to an event to select a still.

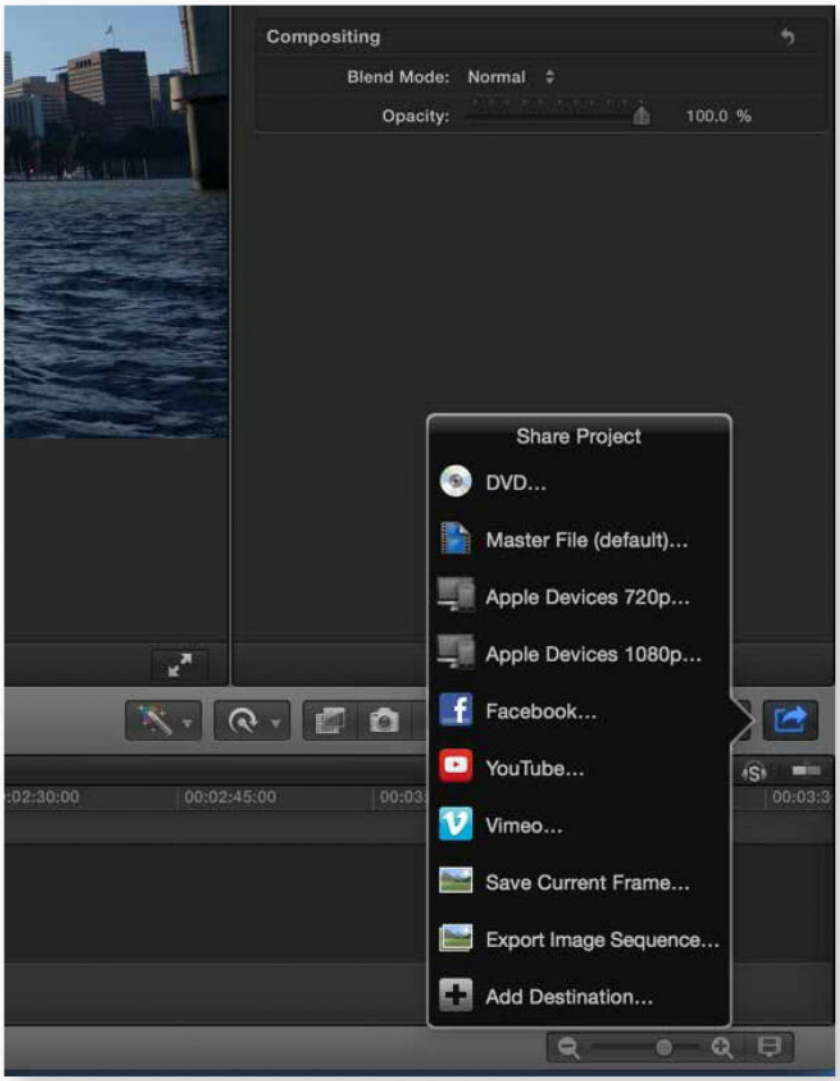
Simply select the thumbnail of the video and it will appear in the media player; it will have a yellow border to indicate it's the selected clip.

3)

Scroll the cursor across the thumbnail to select the exact frame or, for more precision, use the right and left arrow keys to step frame by frame through the video. In this example, I was capturing video of a bridge in Portland from a moving boat, trying to capture a frame where the sun created a flare (Fig. 4).

For even more precision, you can add the clip to an event and move the playhead manually.

5)



The final step is to share the still image by clicking on the Share icon on the toolbar. Select the destination for the export and the selected frame will be saved (Fig. 5).

It's also possible to export an entire range of selected video as a series of frames; this is particularly helpful if you're trying to illustrate something in sports like snowboarding in the pipe or skateboarders doing tricks.

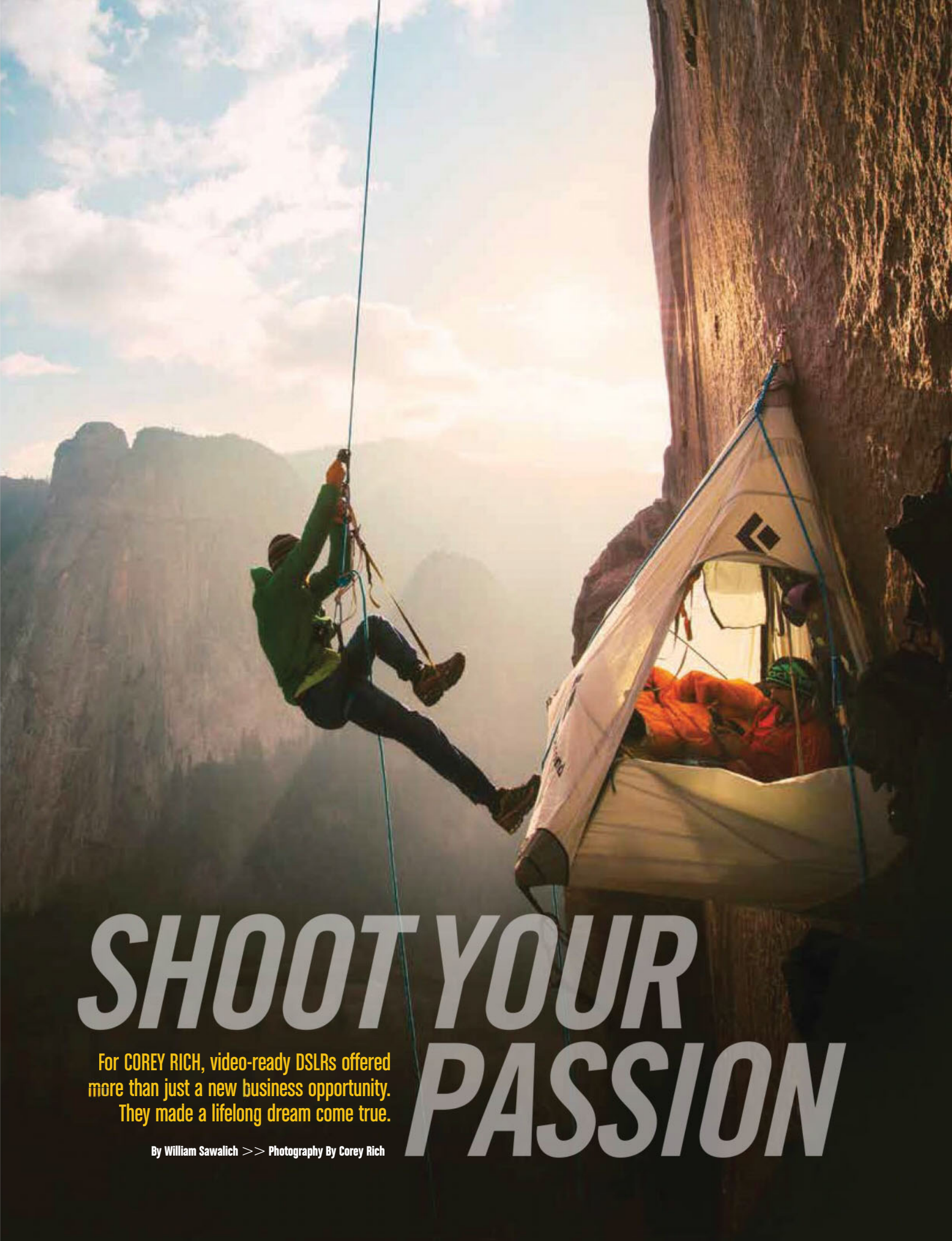
>> More On The Web
Check out our extensive archive of How-To articles on image workflow on the DPP website at **digitalphotopro.com**.

The Future Of Stills

It's possible that, in the near future, many sports, wedding and news photographers will work entirely in a video environment, grabbing stills as necessary from a 4K, 5K or 6K camera. It certainly will become an increasingly viable option for image capture, as it eliminates some of the limitations in capture rate in even the fastest cameras.

In any case, it's a handy trick for today's photographer—the ability to silently capture a subject on video and then pull out a usable image can save the day where traditional still imaging is impractical or impossible. DPP

You can reach David Schloss on Twitter or Instagram @davidjschloss



SHOOT YOUR PASSION

For COREY RICH, video-ready DSLRs offered more than just a new business opportunity. They made a lifelong dream come true.

By William Sawalich >> Photography By Corey Rich

LEFT: Tommy Caldwell and Kevin Jorgeson, El Capitan, Yosemite National Park, California; ABOVE: David Lama and Daniel Streuerer, Patagonia, Argentina.

Corey Rich became a professional photographer at an early age. At 16, he got his first job shooting real estate pictures for the local paper. He hadn't yet mastered all the technical aspects of photography, but he says he's always known a great picture when he sees one.

"I never intended to be a business owner," Rich says. "I was just following my passion. It was never about video versus still photography. It's about storytelling. I was just totally consumed by this idea of communicating in the most powerful way.

"That was the era where my dad had a video camera where you wear a backpack with the VCR in it. We had a crappy camcorder that looked like a boombox you put on your shoulder with a lens attached to it.... I was always intrigued by multimedia, by video."

The problem, Rich says, was that for a very long time it was impossible to make video that looked as good as his photographs. That's why video-capable DSLRs were so revolutionary. It's not simply that they could record high-def video; it's that the sensors and apertures combined to make video that was beautiful and cinematic.

"It was always hard for me to look at a beautiful black-and-white image or a transparency," he says, "and then compare it to…VHS video content. One looked like crap and the other one was super-impressive. Over the years, I probably bought a dozen video cameras at different times.... It was just always so painful to look at the footage. The breakthrough was the day Nikon introduced the D90 as the first video-enabled DSLR."

Rich was traveling to California after a shoot back East when he picked up a copy of *TIME* for the flight home. In it he found the one-page technology column that changed his life.

"The headline was 'Filmmaking Changed Forever,'" Rich says. "It was about the Nikon D90, and this tech reporter, not being a filmmaker or a photographer, recognized—and he might have been the first guy in the world to point this out to everyone—that what was unique about a DSLR that recorded video was that it looked cinematic."

Rich began dabbling with the camera and quickly realized it wasn't like all those previous disappointments. Since it was a form factor he was familiar with, and he had lenses for the camera, all of a sudden cinematic video was easily accessible. He was holding his future in his hands.

When asked by a friend, a longtime adventure video producer, to shoot a segment in Yosemite National Park, Rich asked if he could use his new video-capable DSLR for the assignment.

"Coming from the film world," Rich notes, "he was super-skeptical of that idea. He was like, 'I'm gonna send you the equipment that I want you to shoot it on.' And, of course, I ended up on the side of El Capitan with him, and he had a very high-end camera, I don't remember what it was, but probably a $15,000 or $20,000 top-notch

THIS PAGE: Climbing in Yangshuo, China. "More and more, I'm using continuous lighting for still shoots," says Corey Rich, "LED lights, HMI lights, etc. Never did I, in my wildest dreams, imagine that I would own so much continuous lighting. But now with the amazing low-light sensitivity of DSLRs, you just don't need as much light for video or stills. In my opinion, the Nikon D4 changed the game for low-light video and still shooting. LED lights are powerful and portable."

video camera, and I had the DSLR. I was just comparing the images while hanging on the wall. And I proceeded to shoot the majority of the content on the DSLR."

Hanging on the side of El Capitan is difficult enough to begin with, and without a background in filmmaking, Rich was mostly winging it.

"Later I realized that a tripod would have been helpful," he says, "and an ND filter would have been helpful, and some kind of a loupe to see the back of the camera. But what was happening was, I was completely intrigued. Every time I would shoot a clip on that camera, I would pull my sweatshirt over my head to block the sun and I would watch this cinematic clip—footage of climbing that the world had never seen before because of that aesthetic that the DSLR camera provided. That was it. I was totally hooked."

The biggest difference between video assignments and photo assignments is that he's no longer operating the camera on video shoots. As soon as a project gets large enough for a director, Rich says, that director can't have his eye buried in a viewfinder.

"I think there are moments in any occupation," Rich says, "where you're under enormous pressure, you're an attorney or a doctor or a writer, and you're working long days under pressure and you have this dream: 'God, I wish it were simpler. I wish I was a roofer. I could just be out in the sun right now with a nailing gun putting tiles on a roof.' There are moments as a director where you're managing lots of people, you're paying attention to the story, you're interacting with the client, and I look over at the crew and think, 'Damn, I wish I was operating the camera right now.'

"So I can't say it took me away from the one thing I love. Part of what I love about photography is that you're not just looking through the camera, you're everything. You're the producer, the director, the photographer, the fixer, the travel agent.... As a director, you tend to be all of those things, too, but you get to create content that you could never do alone. That's the key. As soon as there's a director involved, it means an increased level of sophistication. In terms of what's being created, you can't do it alone."

One of the benefits of coming up outside of the motion picture industry is a fondness for minimalism in terms of equipment and crew. If it weren't for Rich's ability to think outside the box, his shoots would be considerably less nimble and more expensive.

"It's project by project," he says, "but I'm always an advocate for 'less is more.' One of the projects that I direct, we're bringing high production values to the table and shooting exclusively on DSLRs. But we're pulling out all the tricks: jib arms with MōVIs attached, flying helicopters.... At the end of the day, I hope it makes it more enjoyable to watch because it looks beautiful. It's not just another schlocky, boring video.

"It's about embracing technology," Rich adds. "That's it. Because, look, guys in the film world have dreamed about doing stuff like flying cameras three feet from an athlete's head as they mountain bike down a single-track trail. That wasn't possible 10 years ago. It is today."

The biggest challenge, notes Rich, is when a client wants both film and video from the same shoot. They may think of it as a time- and cost-saver, but invariably, he says, if one aspect isn't the focus, both aspects will suffer.

"A great example of that," he explains, "is within the last year or so I went to Pakistan to the Karakoram Mountains to

ABOVE: Beth Rodden, Rocklands, South Africa. BELOW: Corey Rich on assignment, interviewing climber David Lama, in the Karakoram, Pakistan. "The world that I'm operating in is, we're either using DSLR cameras or the RED EPIC or the ARRI ALEXA," says Rich, "and those all look great, and they're pretty interchangeable unless you need to be shooting a RAW file. A RED EPIC gives you a lot of creative freedom. But a clip from the Nikon D4S next to a clip from the RED EPIC next to a clip from the ARRI ALEXA, they all look amazing. They all have that cinematic look—shallow depth of field; it just looks like film."

work with this climber, David Lama. Part of it was out of necessity: We're going to one of the most remote places in the world to climb a giant rock face deep in the Karakoram Mountains.... Anyone on that crew needs a super-unique skillset—which is that you can climb this 3,000-foot rock wall. So I spent a lot of time talking with the client about the priorities. Is the priority the film or the still photographs? In this case, it was the film. 'Come back with a great short film that we can enter into festivals and put on the web.' And still photography? 'We need a handful of pictures from this monthlong trip. When you're in an amazing location and you've captured all of the video you need, flip into still photography mode and make some photographs."

Rich believes this dilemma won't last long, as high-definition video gets even more high resolution. Shooting 6K, which he's already doing on some assignments, allows for pulling a still from a high-resolution video with no qualms about the image quality, even in print. "That's our future," he says. "And it looks fantastic."

Asked for advice for other still photographers trying to figure out video, Rich says that if it doesn't feel like a natural fit, don't force it. If you don't love what you're doing, it's going to show.

"After I shot that first project with the D90 on El Cap," he says, "I came home and called all of my clients to try and sell every one of them on why we should extend our scheduled jobs by a day and shoot video, too. I even offered to do it for free because I just wanted to shoot more video. I was so excited. I took every opportunity to shoot, and I think that made a big difference. I was just doing what I loved doing. That's the number-one rule: Shoot what you love. Shoot your passion. I could give you some technical advice—hold your shots for 10 seconds every time—but that's not the real answer. The real answer is, if it's not your calling, it's not your calling. And if it is your calling, live it. Live it to the fullest and immerse yourself. Dive in headfirst and never look back." DPP

To see more of Corey Rich's photography, visit his website at coreyrich.com.

Corey Rich's Gear

Nikon D4S
Nikon D810
Nikon D750
Nikon 1 AW1
Many **NIKKOR** lenses
Litepanels continuous lighting equipment
Nikon SB-910 Speedlights
Profoto strobes
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Lighting In A Box

The Elinchrom BRX 500/500 two-light kit provides on-location lighting that's on par with studio gear back home

By David Schloss

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Location photographers often have to make compromises when it comes to lighting, opting to carry an unreasonable amount of lighting gear in order to achieve a look similar to studio lighting, or dramatically scale back the power and performance of the studio for weight and cost savings. The Elinchrom BRX 500/500 two-light to-go set aims to address those issues with an all-in-one solution that packs just about everything a photographer needs to create a sophisticated lighting solution in a package that's small enough to carry nearly anywhere. Priced at around $1,400 (not including tripod stands), the system provides affordable and relatively powerful lighting for location setups.

In a bag that weighs under 17 pounds, the system contains two 500Ws monolights, two large 26x26-inch softboxes and an Elinchrom EL-Skyport SPEED Radio Transmitter, which enables complete control of settings and flash triggering wirelessly.

I've used a number of Elinchrom monolights, both for reviews and personally, and have always found them easy to use. Large buttons on the rear of the unit surround an easy-to-read display, and it's simple to dial in the perfect setting. The units can be triggered wirelessly, via optical slave mode or with a wired connection. There's also an optional iOS app for controlling the devices, which requires the company's WiFi controller.

The system is packed in a compact travel bag—pay attention when removing the components, as the orientation of the components is important when repacking the bag. The small size of the bag means that there's no room for lighting stands, and stands aren't provided with the set; the result is that many photographers probably will end up repacking the system into another, slightly larger bag.

Because the units are monolights, they require access to AC power (or a battery power system), limiting their use when literally in the field. Of course, the same is true of a standard pack-based lighting kit, but it will be necessary to find two AC outlets to power the dual monolights, so photographers will want to add a power strip to the kit, too. (I was able to fit a small power strip into the provided pack without much problem.)

The wireless controller provided by Elinchrom is powerful enough to reach over 120 meters outdoors in standard mode and 60 meters outdoors in speed mode, and we've never had problems with the Elinchrom EL-Skyport triggering strobes. The triggering units are less robust than, say, a PocketWizard, as they're originally designed for studio use rather than location use, so users should treat them with care.

In order to save weight, the monolights are housed in a plastic enclosure, but it's built solidly enough to handle the trials of most location shoots. You may need to be a bit more careful loading this pack into an airline overhead bin than if the lighting gear were made of metal, but the trade-off is worth it.

The strobes are powerful enough to kick out an enormous amount of light, even with the softboxes attached. The Portalite softboxes are easy to assemble and disassemble, and make for a good, even lighting solution, and the Elinchrom lights work with any Portalite light-shaping accessory.

For $1,400, it's hard to go wrong with this go-anywhere, do-anything pack. It would be great if Elinchrom sold this as an optional kit with two durable and lightweight stands packed into a perfectly sized bag, so that photographers could take everything they need in one package without having to purchase stands or take two separate bags on the road.

But for the location photographer, the Elinchrom BRX 500/500 two-light to-go set is an excellent lighting solution.

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Misinformation

Camera Tech

Myth: Disruptive Innovations = Prevailing Technology's Demise

Disruptive technology is about to give photographers more camera choices than ever, and that's a good thing

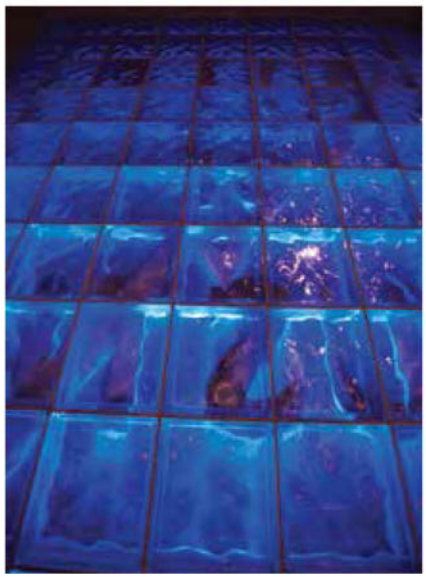
By David Schloss

The brilliant podcast "99% Invisible" recently took a look at the future of the automated car and the two schools of thought behind the development of self-driving vehicles. Self-driving cars are what's called a disruptive technology. That's the term for anything that comes along and radically changes how we live or work with a new way to approach something. We have cars, we have automation. Put them together, and we have the potential for a vastly different world—one where we hail cars on demand and they drive to us, let us off and then drive away, freeing us from car payments, insurance and parking lots forever.

One major player in automated cars is Google, and with their full-steam-ahead effort to eliminate drivers from the equation so quickly, the head of the team expects that his preteen son will never need a driver's license. Meanwhile, the group from Carnegie Mellon University (which has been working on automated cars for 30 years) sees a future where vehicles gradually adopt technologies that assist the driver—such as auto-adjusting cruise control and highway autopilot modes—and that eventually we'll get to fully automated vehicles.

The same combination of technologies, but two radically different views about how and when they will change our daily lives.

This is a perfect parallel to the professional camera market. This issue, we looked at the cutting-edge Sony a7R II and also evaluated the status of the professional DSLR. Both systems are more powerful today than any camera has been in the history of photography, and they're both poised to get even more powerful. One thing is clear: Technology is about to change the camera market whether you shoot with mirrorless or a pro DSLR.



David Schloss

Can you tell if this was shot on a DSLR or mirrorless camera? Neither can anyone else. What's important in photography is what works for you, and how the final image looks.

The main mirrorless manufacturers—Fujifilm, Olympus, Panasonic, Samsung and Sony—traditionally have had a fraction of the users that Canon and Nikon have, which gives them some interesting advantages right now. Because they lacked big groups of established professionals—with big inventories of expensive lenses—there were fewer customers to complain about having to buy all new equipment when their mirrorless systems launched.

The relative technological immaturity of the mirrorless camera has allowed manufacturers to release a stream of new models that offer powerful updates over their previous versions, while DSLRs are seeing smaller (but still significant) improvements each iteration. This makes the mirrorless world look as exciting as the digital camera world did when DSLRs were first new on the scene.

Meanwhile, though, Canon and Nikon don't need to capitulate to customer requests for mirrorless camera systems until the moment that mirrorless technology exceeds the performance of their own DSLR systems. That could be tomorrow or it could be five years from now—that date largely depends on how fast the mirrorless companies advance their systems and how well Canon and Nikon evolve their current offerings.

In many ways, it makes more sense for Canon and Nikon to try to widen the gap between themselves and the mirrorless systems, and make their competitors play catchup because their current expertise is in DSLRs, and these cameras still offer a huge array of benefits. If Canon and Nikon can keep pushing ahead and creating DSLR systems that are more powerful than mirrorless cameras, they maintain their current customer base without needing to disrupt their own technology. And, presumably, when their own professional mirrorless offerings are ready, they will be able to bring them to market rapidly and pull their current customers along.

So here's where we stand: We have a disruptive technology challenging the current market in much the same way that digital challenged film photography. All of the players in the camera market are feeling additional pressure to create advanced systems with features that woo customers away from the competitors.

The result is a market that's great for the photographer and one in which we're going to see some massive change very quickly. The question is simply: How much change, and how fast? Personally, I think that cameras will see radical advances brought on by changes in technology, with the result being incredible new technologies in the hands of consumers in a very short period of time. DPP

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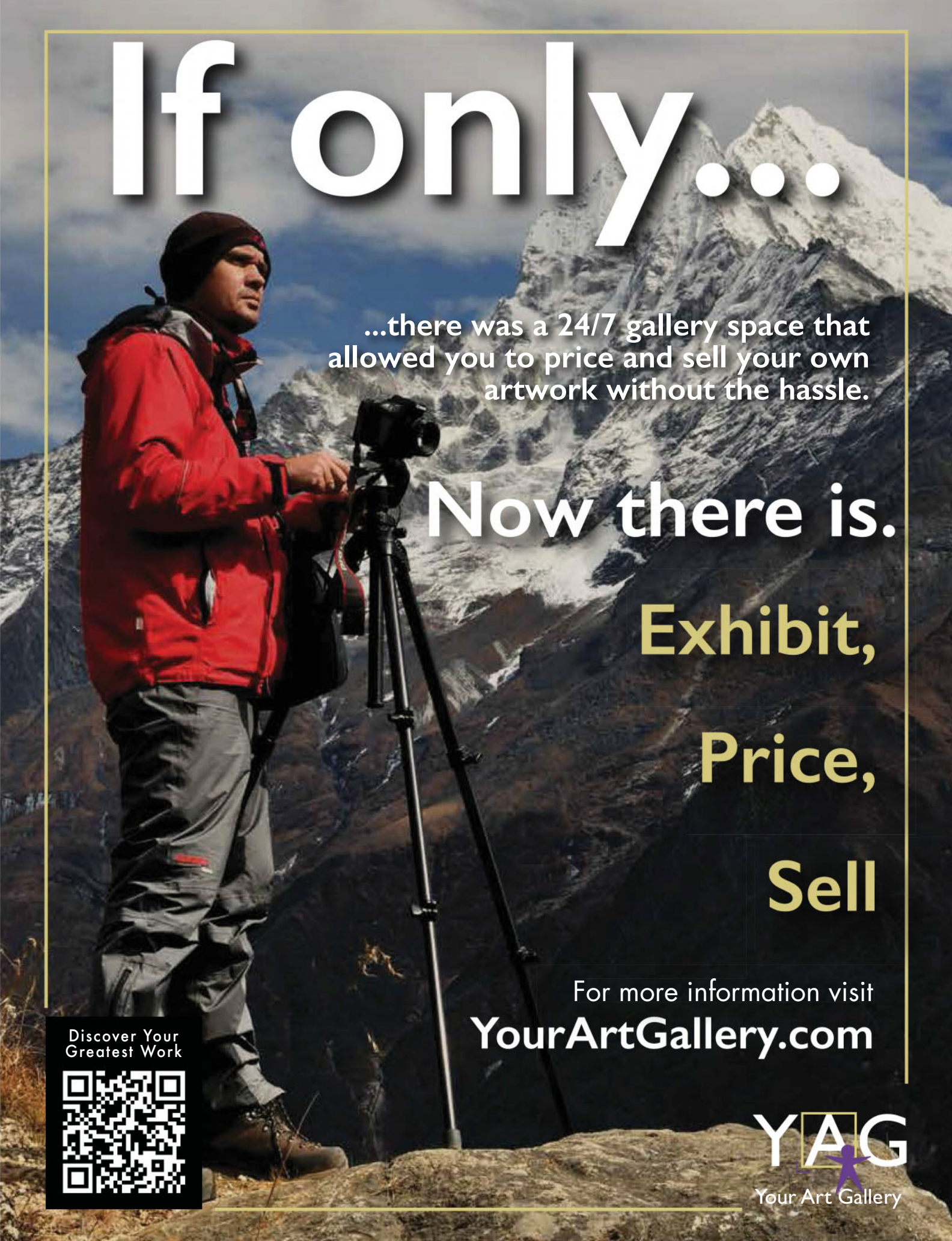
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